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CRPL-F 240 PART B

FOR OFFICIAL USE

PART B
SOLAR - GEOPHYSICAL DATA

ISSUED
AUGUST 1964

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

SOLAR - GEOPHYSICAL DATA

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Addendum to text:

ADJUSTMENT IN THE 10.7 CM SOLAR NOISE OBSERVATIONS
FOR VARIATIONS IN THE SUN-EARTH DISTANCE

The solar radio noise as observed and reported at Ottawa on a wavelength of 10.7 cm, is a measure of this radiation incident on the earth for a particular day. For geophysical studies the use of the observed flux is appropriate, but as an indication of intrinsic or absolute solar activity, it must be modified for the varying distance between sun and earth. The most suitable adjustment is that which places the sun at unit astronomical distance. As a guide for following small changes of radio emission during the IQSY, daily values of the flux adjusted to 1 Astronomical Unit will be reported in addition to the observed values. This measure consists of emissions from the undisturbed solar atmosphere and from any centers of activity. The intensity of the outstanding events will be reported as before.

Recent considerations of the significance of the annual variation of the sun-earth distance have already appeared in geophysical studies [1,2]. Monthly adjusted means for the first part of 1964 are given in Table I and are to be compared with the minimum value of 65.5 flux units which occurred in January 1954.

A. E. Covington,
July, 1964

TABLE I

January	72.0
February	74.3
March	74.8
April	73.0
May	70.7
June	71.3

-
- [1] On the World Wide Component of Variations in the E-Layer Ionization, T. Shimazaki, Jour. A and T Physics 1963, Vol. 25, pp. 331 to 337.
- [2] Effect on the Earth's Orbital Eccentricity on Incident Solar Flux at 10.7 cm, M. K. Das Gupta and D. Basu, Jour. A and T Physics 1964, Vol. 26, pp. 135 to 137.

DAILY VALUES OF SOLAR FLUX AT 2800 Mc/s (10.7 cm)
RECORDED AT NATIONAL RESEARCH COUNCIL
OTTAWA, CANADA

OBSERVED FLUX IN WATTS/M²/C/SEC $\times 10^{-22}$ FOR 2 POLARIZATIONS

1964						
Day	Jan.	Feb.	Mar.	Apr.	May	June
1	--	72.9	77.5	77.4	68.9	67.7
2	70.6	71.6	75.2	75.4	68.4	68.0
3	73.1	70.9	73.8	76.8	69.8	68.2
4	72.8	71.2	75.0	76.8	70.3	68.2
5	73.7	72.4	72.1	76.0	71.9	67.8
6	75.0	72.7	73.5	75.6	70.9	68.4
7	75.3	72.0	72.9	75.5	70.9	69.6
8	73.2	73.2	73.7	73.5	71.5	69.8
9	73.4	71.8	71.6	75.0	70.9	69.0
10	73.3	72.7	73.2	72.8	70.1	70.3
11	74.6	71.7	75.1	73.9	70.1	70.3
12	76.2	72.8	77.2	72.7	69.4	68.9
13	76.1	73.3	78.2	73.0	68.5	70.2
14	75.6	72.6	78.9	71.6	68.3	70.5
15	74.6	72.7	78.7	71.4	68.0	71.6
16	74.4	73.1	77.0	70.7	70.0	70.6
17	71.5	73.9	77.5	71.8	69.6	71.1
18	73.9	76.0	75.3	71.8	70.4	71.7
19	74.8	75.6	74.2	70.9	68.7	70.1
20	75.9	76.2	74.3	71.4	67.7	70.4
21	74.9	78.5	74.4	71.6	68.0	69.7
22	74.6	79.8	78.4	70.7	67.1	69.5
23	74.7	84.4	77.4	70.3	67.3	67.4
24	74.3	85.2	77.0	71.6	68.0	68.0
25	73.2	84.4	74.1	70.6	67.5	67.7
26	73.8	86.5	74.3	69.6	68.4	67.6
27	73.3	84.9	75.2	69.5	67.7	67.4
28	77.2	84.4	75.7	69.9	69.6	67.3
29	77.5	80.8	75.0	68.8	69.1	67.1
30	74.9		78.2	69.0	68.2	67.2
31	74.3		76.9		67.7	
<hr/>						
Means	74.4	76.1	75.5	72.5	69.1	69.0

DAILY VALUES OF SOLAR FLUX AT 2800 Mc/s (10.7 cm)
RECORDED AT NATIONAL RESEARCH COUNCIL
OTTAWA, CANADA

FLUX ADJUSTED TO 1 ASTRONOMICAL UNIT
IN WATTS/M²/C/SEC $\times 10^{-22}$ FOR 2 POLARIZATIONS

1964						
Day	Jan.	Feb.	Mar.	Apr.	May	June
1	--	70.8	76.1	77.3	70.0	69.7
2	68.3	69.5	73.9	75.3	69.5	70.0
3	70.7	68.8	72.5	76.8	71.0	70.2
4	70.4	69.2	73.8	76.9	71.5	70.2
5	71.3	70.4	70.9	76.1	73.2	69.8
6	72.5	70.7	72.4	75.8	72.2	70.5
7	72.8	70.1	71.8	75.7	72.2	71.7
8	70.8	71.2	72.7	73.7	72.9	71.9
9	71.0	69.9	70.6	75.2	72.2	71.1
10	70.9	70.8	72.2	73.1	71.5	72.5
11	72.1	69.8	74.1	74.3	71.5	72.5
12	73.7	70.9	76.3	73.1	70.9	71.0
13	73.6	71.5	77.3	73.4	69.9	72.4
14	73.1	70.8	78.0	72.0	69.8	72.8
15	72.1	70.9	77.8	71.9	69.5	73.9
16	72.0	71.3	76.2	71.2	71.6	72.9
17	69.2	72.1	76.7	72.4	71.2	73.8
18	71.5	74.3	74.6	72.4	72.1	74.1
19	72.4	73.9	73.6	71.5	70.3	72.4
20	73.5	74.5	73.7	72.1	69.3	72.7
21	72.5	76.8	73.9	72.3	69.7	72.0
22	72.3	78.0	77.9	71.5	68.8	71.8
23	72.4	82.6	76.9	71.1	69.0	69.6
24	72.0	83.4	76.5	72.5	69.8	70.2
25	70.9	82.7	73.7	71.4	69.3	69.9
26	71.5	84.8	74.0	70.5	70.2	69.9
27	71.1	83.3	74.9	70.5	69.5	69.7
28	74.9	82.8	75.5	70.9	71.5	69.6
29	75.2	79.3	74.8	69.8	71.0	69.4
30	72.7		78.0	70.0	70.1	69.5
31	72.1		76.7		69.6	
<hr/>						
Means	72.0	74.3	74.8	73.0	70.7	71.3

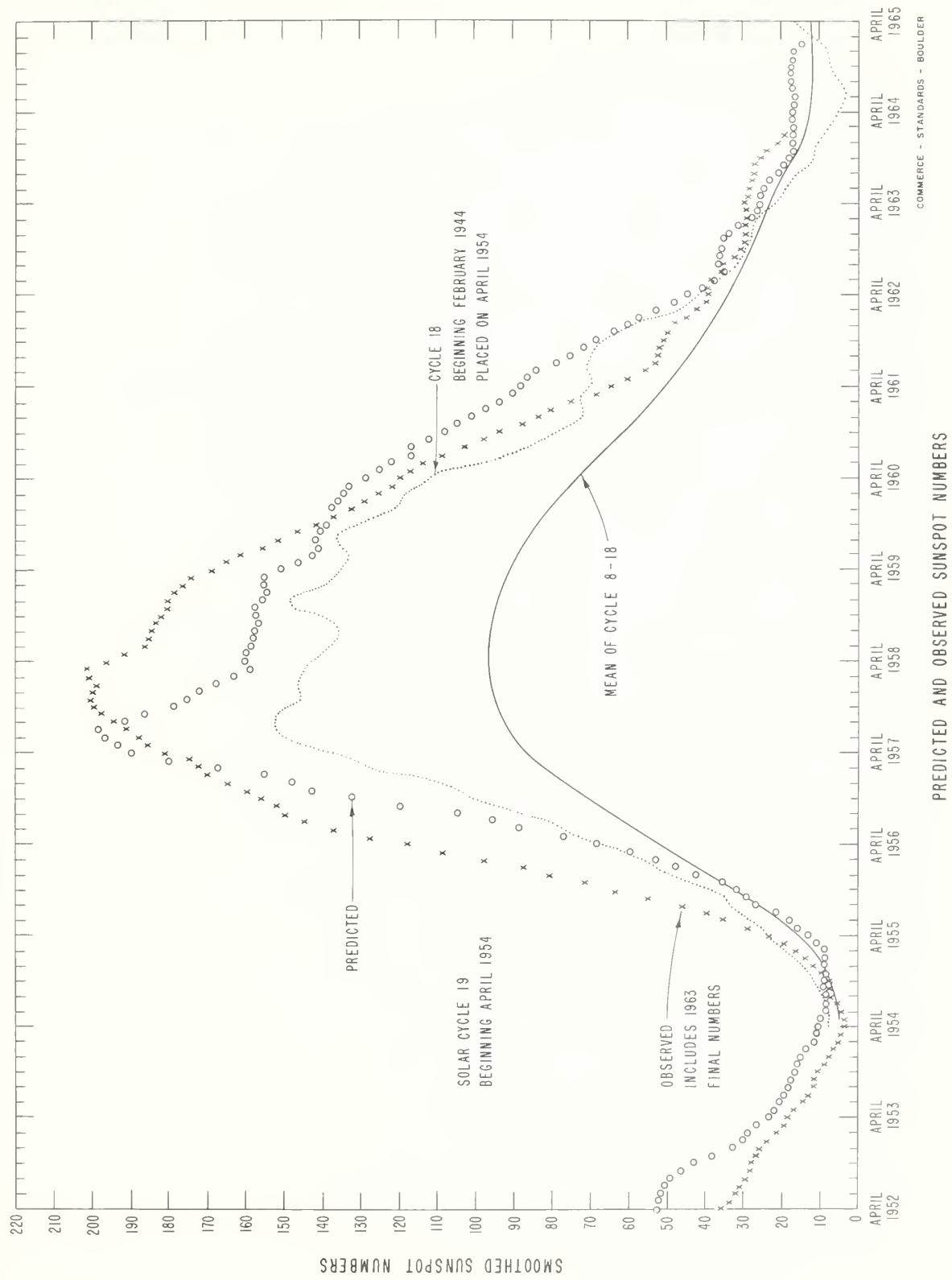
DAILY SOLAR INDICES

June 1964	American Relative Sunspot Numbers R_A'
1	11
2	11
3	10
4	6
5	0
6	0
7	0
8	0
9	0
10	0
11	4
12	2
13	13
14	16
15	25
16	14
17	10
18	24
19	22
20	6
21	0
22	0
23	0
24	0
25	0
26	0
27	0
28	0
29	4
30	5
Mean:	6.1

July 1964	Zürich Provisional Relative Sunspot Numbers R_Z	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux	
		S	S_A
1	7	67.4	69.7
2	0	67.0	69.3
3	0	67.3	69.6
4	8	68.1	70.4
5	10	67.6	69.9
6	8	67.8	70.1
7	7	67.0	69.3
8	0	67.9	70.2
9	0	67.1	69.4
10	0	66.6	68.9
11	7	67.6	69.9
12	0	66.9	69.1
13	0	66.5	68.7
14	10	69.2	71.5
15	12	69.5	71.8
16	11	69.2	71.6
17	9	68.6	70.9
18	8	68.0	70.2
19	0	67.4	69.6
20	0	66.6	68.8
21	0	66.4	68.5
22	0	66.1	68.2
23	0	66.4	68.5
24	0	66.1	68.2
25	0	65.8	67.9
26	0	64.8 **	66.9
27	0	65.3	67.3
28	0	65.4	67.4
29	0	65.9	67.9
30	0	66.2	68.3
31	7	66.2	68.2
Mean:	3.4	67.0	69.2

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** July 26, 1964: Lowest flux observed since 1954.



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CALCIUM PLAGE AND SUNSPOT REGIONS

JULY 1964

July 1964	LAT.	MCMATH PLAGE NUMBER	RETURN OF REGION	CALCIUM PLAGE DATA						SUNSPOT DATA		
				CMP VALUES		HISTORY	AGE (ROTA- TIONS)	DATE FIRST SEEN (1)	DURA- TION (DAYS)	CMP VALUES		HISTORY
				AREA	INT					AREA	COUNT	
3.8	S37	7385 (2)	New	200	2	b — d	1	July 5	1	(20)	(1)	ℓ — d
4.7	S02	7383	New	400	2	ℓ ∩ d	1	June 28	≥10			
5.4	N24	7390	New	(300)	(1.5)	b — ℓ	1	July 10	1			
6.0	S09	7391 (2)	New	(200)	(1)	b — ℓ	1	July 10	1			
8.1	N05	7386 (2)	New	200	1.5	b — d	1	July 6	1			
8.3	S05	7392 (2)	New	(100)	(2)	b — d	1	July 10	1	(60)	(1)	b ∩ d
8.7	S14	7393 (2)	New	(100)	(1.5)	b — d	1	July 10	1			
9.0	N05	7394 (2)	New	100	1	b — d	1	July 10	1			
9.3	N32	7384	7343	900	3	ℓ ∩ ℓ	2	July 2	14			
9.3	N45	7387	New	100	1.5	b — d	1	July 9	2			
9.7	N02	7400	New	(100)	(2.5)	b — d	1	July 13	2			
10.1	S06	7401	New	(100)	(1.5)	b — d	1	July 13	2			
11.7	N07	7388 (3)	7357	500	2	b ∩ d	2	July 6	10	70	3	b ∧ d
12.1	N14	7406	New	(300)	(1.5)	b — ℓ	1	July 16	2			
12.2	N29	7395 (2)	New	200	2	b — d	1	July 10	1			
12.4	S02	7397 (2)	New	200	1	b — d	1	July 11	1			
13.4	N30	7389	New	300	1.5	b — d	1	July 9	3			
13.9	S11	7402	New	200	1.5	b — d	1	July 14	3	70	3	b ∧ d
14.8	N07	7403	New	200	2	b — d	1	July 14	5			
14.9	N10	7396 (2)	New	(100)	(1)	b — d	1	July 10	1			
15.0	N29	7398	New	200	2.5	b — d	1	July 11	3			
16.4	N29	7407	New	200	2	b ∩ ℓ	1	July 16	6			
16.9	N18	7408	New	100	2	b — d	1	July 17	2	70	3	b ∧ d
17.5	S01	7399	New	200	1.5	ℓ ∩ d	1	July 11	6			
17.7	N28	7404	New	400	3	b ∩ ℓ	1	July 14	10			
20.5	N10	7409	New	(300)	(1)	b — d	1	July 23	2			
21.2	N08	7405	New	(400)	(1)	ℓ ∩ d	1	July 15	4			
22.3	N37	7410	New	100	1.5	b — ℓ	1	July 23	5	(100)	(2)	b — d
23.5	N15	7418 (2)	New	(200)	(2)	b — ℓ	1	July 28	1			
24.2	S09	7411 (2)	New	200	2	b — d	1	July 24	1			
24.7	N18	7415 (2)	New	(200)	(2.5)	b — d	1	July 27	1			
25.5	N06	7416 (2)	New	(400)	(1.5)	b — d	1	July 27	1			
25.6	S06	7419	New	(100)	(1)	b — d	1	July 28	2	(100)	(2)	b — d
26.9	S15	7417 (2)	New	100	2	b — d	1	July 27	1			
27.4	S05	7420 (2)	New	200	1.5	b — d	1	July 28	1			
28.1	N11	7421	New	100	1	b — d	1	July 28	2			
28.1	S08	7424	New	(100)	(1)	b — d	1	July 30	4			
28.5	N21	7425	New	(300)	(3)	b ∩ ℓ	1	July 31	4	(100)	(1)	b — d
28.6	N21	7422 (2)	New	100	1.5	b — d	1	July 28	1			
29.3	N15	7412 (2)	New	(200)	(1)	b — d	1	July 24	1			
30.9	N32	7413	New	(200)	(1.5)	ℓ — d	1	July 24	2	(100)	(1)	b — d
31.1	N08	7426	New	(200)	3	b ∩ ℓ	1	Aug. 1	6			
31.3	N03	7414	New	(300)	(1.5)	ℓ ∩ d	1	July 25	4			

(1) No calcium plage observations were secured at the McMath-Hulbert Observatory on July 8, 1964.

(2) These very small and ephemeral plages last for only one day.

(3) Plage 7388 was seen on the disk as a weak plage on July 6 and the days following, but was not reported until July 9.

MT. WILSON MAGNETIC CLASSIFICATIONS OF SUNSPOTS

I1b

JULY 1964

July 1964	TIME MEAS. UT	LAT	MER DIST	TYPE	July 1964	TIME MEAS UT	LAT	MER DIST	TYPE
1	0005	S05	E46	α p	13	No Obs.			
1	1450	S05	W37	α p	14	1745	N27	E37	β p*
2-3	No Spots				15	1630	N27	E26	β p*
4	1730	N28	E56	β p	16	1645	N17 N28	W57 E13	α f β p*
5	1810	N29	E43	β p	17	1800	N28	W02	α p*
6	1635	N29	E27	α f	18	No Obs.			
7-8	No Spots				19-30	No Spots			
9	No Obs.				31	1815	N19	W30	β p*
10-12	No Spots								

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*New cycle

Erratum: In CRPL-F 239B for July 1964, the Mt. Wilson data published on page I1b, the latitude and longitude columns have been reversed.

FINAL CORONAL LINE EMISSION INDICES

APRIL 1964

CMP April 1964	North East Quadrant (observed 7 days earlier)					South East Quadrant (observed 7 days earlier)					South West Quadrant (observed 7 days later)					North West Quadrant (observed 7 days later)				
	G ₆	G ₁	R ₆	R ₁		G ₆	G ₁	R ₆	R ₁		G ₆	G ₁	R ₆	R ₁		G ₆	G ₁	R ₆	R ₁	
1	x	x	x	x		x	x	x	x		7	11	18	23		7	9	11	15	
2	5	7	10	14		4	5	10	12		3	4	13	20		3	4	8	13	
3	x	x	x	x		x	x	x	x		3	6	8	10		9	12	11	18	
4	26	42	20	26		6	14	11	14		6	17	9	11		29	42	12	20	
5	37	67	17	28		6	18	10	16		3	6	10	12		14	29	13	20	
6	x	x	x	x		x	x	x	x		x	x	x	x		x	x	x	x	
7	61	111	x	x		20	58	x	x		4	15	11	12		6	7	8	9	
8	x	x	x	x		x	x	x	x		4	6	14	20		14	20	13	18	
9	x	x	x	x		x	x	x	x		x	x	0	0		x	x	8	18	
10	x	x	x	x		x	x	x	x		x	x	0	0		x	x	8	18	
11	23	29	x	x		12	13	x	x		x	x	x	x		x	x	x	x	
12	x	x	x	x		x	x	x	x		x	x	8	10		x	x	11	19	
13	x	x	x	x		x	x	x	x		x	x	x	x		x	x	x	x	
14	23	32	x	x		12	22	x	x		x	x	9	11		x	x	13	15	
15	13	18	16	20		5	9	9	12		x	x	9	11		x	x	13	15	
16	9	24	24	48		2	4	9	20		6	11	10	20		25	67	11	14	
17	14	27	16	32		2	3	9	12		x	x	x	x		x	x	x	x	
18	39	87	18	36		5	8	8	12		3	6	9	13		4	7	9	16	
19	8	18	19	40		3	4	9	12		3	6	x	x		3	4	x	x	
20	x	x	x	x		x	x	x	x		x	x	x	x		x	x	x	x	
21	3	4	8	12		2	3	5	6		15	34	12	16		6	11	10	12	
22	9	11	13	16		4	5	15	22		22	42	23	40		8	9	22	26	
23	x	x	x	x		x	x	x	x		12	20	10	16		6	8	12	18	
24	20	28	3	10		24	26	3	8		x	x	x	x		x	3	x	x	
25	x	x	x	x		x	x	x	x		4	6	8	10		3	3	7	8	
26	x	x	x	x		x	x	x	x		7	9	10	24		5	6	6	8	
27	11	12	17	24		22	40	22	40		x	x	x	x		x	x	x	x	
28	x	x	x	x		x	x	x	x		x	x	x	x		x	x	x	x	
29	x	x	15	22		x	x	16	20		x	x	11	16		x	x	7	9	
30	x	x	x	x		x	x	x	x		x	x	x	x		x	x	x	x	

x = no observations

* = yellow line emission

a = index computed from low weight data

CORONAL LINE EMISSION INDICES - 1964

FINAL CORONAL LINE EMISSION INDICES

MAY 1964

CMP May 1964	North East Quadrant (observed 7 days earlier)				South East Quadrant (observed 7 days earlier)				South West Quadrant (observed 7 days later)				North West Quadrant (observed 7 days later)			
	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁
1	15	25	8	11	7	11	10	12	x	x	x	x	x	x	x	x
2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
3	13	15	6	8	3	3	3	4	9	20	x	x	19	22	x	x
4	7	9	x	x	2	2	x	x	7	8	11	13	13	18	8	10
5	13	20	13	32	2	4	11	16	27	51	x	x	41	64	x	x
6	8	11	15	18	2	6	13	14	x	x	x	x	x	x	x	x
7	8	14	12	17	4	6	17	25	1	3	13	16	11	17	12	16
8	15	18	x	x	17	20	x	x	7	11	10	18	12	14	10	13
9	6	7	12	16	3	4	8	12	6	8	11	15	11	12	12	15
10	18	37	10	24	18	36	6	8	3	8	10	12	17	25	9	13
11	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12	27	42	0	0	11	15	0	0	1	5	x	x	8	14	x	x
13	x	x	13	17	x	x	10	11	13	15	13	15	34	44	11	14
14	x	x	x	x	x	x	x	x	13	18	18	20	42	65	9	16
15	x	x	x	x	x	x	x	x	7	9	0	0	19	28	0	0
16	x	x	x	x	x	x	x	x	6	7	15	20	12	14	13	18
17	6	8	x	x	4	6	x	x	5	6	12	16	6	8	13	20
18	7	9	11	18	7	8	13	25	x	x	x	x	x	x	x	x
19	34	37	x	x	34	42	x	x	x	x	15	19	x	x	14	19
20	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
21	10	12	13	18	11	16	14	20	11	11	12	16	14	23	15	28
22	1	6	8	10	4	6	10	14	10	16	x	x	8	11	x	x
23	6	8	13	17	7	8	15	22	6	8	5	8	6	8	6	9
24	0	0	11	13	1	6	8	9	x	x	x	x	x	x	x	x
25	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
26	4	6	x	x	3	11	x	x	x	x	x	x	x	x	x	x
27	19	20	12	14	21	24	12	13	16	28	10	16	15	20	0	0
28	26	34	14	18	21	27	15	22	x	x	17	24	x	x	12	15
29	22	30	0	0	11	16	0	0	10	13	11	14	30	37	6	8
30	23	28	8	12	11	16	11	16	14	18	x	x	27	32	x	x
31	12	20	8	10	4	11	10	14	11	18	11	14	12	16	11	17

x = no observations

* = yellow line emission

a = index computed from low weight data

COMPARISON - STANDARD

FINAL CORONAL LINE EMISSION INDICES

JUNE 1964

CMP June 1964	North East Quadrant (observed 7 days earlier)				South East Quadrant (observed 7 days earlier)				South West Quadrant (observed 7 days later)				North West Quadrant (observed 7 days later)			
	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁
1	x	x	x	x	x	x	x	x	18	28	14	25	19	22	15	20
2	x	x	x	x	x	x	x	x	8	9	10	12	9	12	10	13
3	17	25	13	18	9	12	7	11	7	8	12	18	7	11	16	20
4	13	14	12	17	12	12	11	12	19	24	6	7	17	20	9	11
5	7	9	x	x	6	8	x	x	12	15	15	19	16	18	14	18
6	16	18	2	7	10	13	0	0	x	x	x	x	x	x	x	x
7	x	x	x	x	x	x	x	x	15	19	14a	22a	17	22	15a	24a
8	x	x	x	x	x	x	x	x	0	0	19	28	8	9	14	20
9	35	44	x	x	16	23	x	x	11	15	7	9	11	13	7	10
10	19	24	x	x	15	22	x	x	1	3	15	20	9	14	12	16
11	x	x	15	30	x	x	13	16	5	7	12	18	5	7	11	14
12	20	25	9	11	15	22	10	14	8	14	27	43	14	25	19	28
13	25	32	x	x	12	17	x	x	11	12	17	20	9	12	13	22
14	13	20	24	28	7	8	15	20	x	x	19	40	x	x	14	30
15	18	22	29	50	10	14	20	33	8	13	11	15	13	18	10	14
16	14	24	13	24	6	7	9	12	9	31	13	19	9	11	12	15
17	13	20	13	18	18	24	13	20	12	16	14	21	8	17	14	20
18	2	8	3	9	19	23	5	11	15	18	x	x	33	61	x	x
19	13	17	15	18	12	16	13	14	8	9	8	11	14	24	22	64
20	x	x	x	x	x	x	x	x	x	x	14	24	x	x	13	20
21	9	14	13	22	13	17	9	20	x	x	12	15	x	x	11	15
22	5	7	15	20	2	6	14	18	1	3	x	x	2	8	x	x
23	11	11	8	10	15	21	8	13	10	13	11	13	15	18	9	11
24	7	9	12	16	4	6	10	22	8	13	14	20	13	23	2	12
25	6	6	8	10	4	5	10	12	3	6	10	12	6	11	10	15
26	8	11	15	26	5	14	20	24	14	20	24	28	25	29	11	18
27	12	14	14	18	12	13	16	20	x	x	x	x	x	x	x	x
28	x	x	9	21	x	x	10	26	x	x	7	8	x	x	8	12
29	10	13	20	26	6	7	15	25	7	10	0	0	9	12	5	6
30	9	20	12	16	3	6	12	15	12	13	9	11	12	13	6	9

x = no observations

* = yellow line emission

a = index computed from low weight data

CORONAL LINE EMISSION INDICES - SOLAR

PROVISIONAL CORONAL LINE EMISSION INDICES

JULY 1964

CMP July 1964	North East quadrant (observed 7 days earlier)				South East quadrant (observed 7 days earlier)				South West quadrant (observed 7 days later)				North West quadrant (observed 7 days later)			
	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁
1	6	8	19	26	0	0	12	18	x	x	x	x	x	x	x	x
2	x	x	x	x	x	x	x	x	x	x	12a	16a	x	x	13a	20a
3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
4	x	x	x	x	x	x	x	x	6	6	13a	17a	8	11	13a	16a
5	x	x	9	14	x	x	7	11	x	x	x	x	x	x	x	x
6	10a	14a	x	x	2a	6a	x	x	2	11	14	16	9	17	12	14
7	x	x	12	17	x	x	10	16	x	x	15	20	x	x	18	27
8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
9	x	x	x	x	x	x	x	x	14	22	11	17	8	11	11	15
10	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11	x	x	x	x	x	x	x	x	0	0	14	17	14	20	11	12
12	x	x	6	9	x	x	6	8	x	x	13	14	x	x	13	18
13	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
14	x	x	x	x	x	x	x	x	6	8	12	15	6	8	16	20
15	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
16	x	x	10a	13a	x	x	8a	10a	x	x	x	x	x	x	x	x
17	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
18	2	6	19a	28a	5	6	14a	18a	3	6	15	20	7	8	23	25
19	x	x	x	x	x	x	x	x	x	x	15	18	x	x	19	28
20	5	8	15	26	0	0	13	14	x	x	x	x	x	x	x	x
21	x	x	14	17	x	x	11	14	x	x	x	x	x	x	x	x
22	x	x	x	x	x	x	14	17	5	6	15	22	6	8	13	17
23	7	14	8	10	1	6	14	17	x	x	x	x	x	x	x	x
24	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
25	12	31	11	14	3	6	9	12	x	x	x	x	x	x	x	x
26	x	x	13	15	x	x	17	24	0	0	13	16	3	3	9	12
27	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
28	8	10	15	28	5	7	19	20	x	x	x	x	x	x	x	x
29	x	x	x	x	x	x	x	x	11	16	17a	22a	6	8	17a	24a
30	x	x	x	x	x	x	x	x	x	x	12	16	x	x	20	30
31	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

x = no observations

* = yellow line

a = index computed from low weight data

CHANGING STANDARDS

SOLAR FLARES

JULY 1961

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURATION MINUTES	IM- POR- TANCE	OBS. COND.	TIME UT	MEASUREMENTS		MAX WIDTH H α	MAX INT H α	PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX LAT	APPROX MER DIST					MEAS AREA Sq Deg	CORR AREA Sq Deg			
CAPRI-S	JULY 1961													
	01	0145	0600	NO FLARE	PATROL		1-	3	1339	.50				
	01	1330	1347	N29 E90										
	04	0345	0425	NO FLARE	PATROL									
CAPRI-S	05	0625	0640	NO FLARE	PATROL									
	05	1505 E	1555 D	N30 E47			1-	3	1530	1.00	1.70			
	06	0220	0230	NO FLARE	PATROL									
	06	0245	0310	NO FLARE	PATROL									
CATANIA	06	0320	0330	NO FLARE	PATROL									
	07	0215	0315	NO FLARE	PATROL									
	07	0415	0450	NO FLARE	PATROL									
	07	0838 E	0850 D	N30 E21			1-							
MCMATH	07	1105 E	1140 D	N30 E21			1-							
	07	1145	1210 D	N32 E22	7384		1-	2	1149	.50	.60			
	07	1422	1433 D	N32 E20	7384		1-	1	1430	.20	.20			
	08	0250	0320	NO FLARE	PATROL									
LOCKHEED	08	0425	0450	NO FLARE	PATROL									
	09	0137	0155	0141	N32 E01		1-	2	0141	.40	.40		10	
	09	0155	0200	NO FLARE	PATROL									
	09	0245	0300	NO FLARE	PATROL									
CAPRI-S	09	1058	1115	N33 W04			1-	2	1105	.90	1.00			
	09	2119	2140	2124	N32 W13	7384	1-	2	2124	.20	.20			
	10	0150	0430	NO FLARE	PATROL									
	11	0200	0255	NO FLARE	PATROL									
MCMATH	11	0410	0510	NO FLARE	PATROL									
	11	1445	1530	1447	S04 E82	7399	1-	1	1447	.30				
	11	1459 E	1513 D	S05 E85			1-	1	1507	.60				
	11	1508 E	1531 D	S08 E80			1-	1	1514	.30		1.90		
HUANCAYO	11	1612 E	1639 D	S04 E80	7399		1-	1	1614	.30	.80		10	
	11	1708	1732	S05 E80			1-	2	1720	.30				
	12	0330	0400	NO FLARE	PATROL									
	12	0415	0535	NO FLARE	PATROL									
LOCKHEED	12	2131	2200	2140	S47 E17		1-	2	2140	.30	.40		10	
	13	0150	0155	NO FLARE	PATROL									
	13	0220	0450	NO FLARE	PATROL									
	13	1736	1800	1740	N28 E53	7404	1-	1	1740	.30	.60			
MCMATH	13	2237	2256	2243	S53 E55		1-	2	2243	.30	.60		10	
	14	0715	0750	0724	N28 E45		1-		0724	.50	.70			
	14	0805 E	0825 D	N28 E45			1-	2	0805	.91	1.40			
	14	0811	0819	N28 E46			1-	3	0814	1.50	2.30			
HTE-PROVEN	14	0812	0820	0815	N28 E44		1-		0815	.60	.90			
	14	0811	0819	N28 E46			1-							
	14	0812	0820	0815	N28 E44		1-							
	14	0812	0820	0815	N28 E44		1-							

SOLAR FLARES

JULY 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				MAX WIDTH H _g	MAX INT °	PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX	REGION				TIME	MEAS. AREA Sq Deg	CORR Sq Deg				
CATANIA ARCETRI HTE-PROVEN HTE-PROVEN SALTSJOBADN CATANIA HTE-PROVEN SALTSJOBADN MCMATH MCMATH LOCKHEED LOCKHEED	14 JUL 1964														
	14	0815 E	0825 D	N28 E43	7404	10 D	1	2	0850	1.50	2.30				
	14	0850 E	0915 D	N28 E45	7404	25 D	1			.30	.40				
	14	1054	1102	N28 E42			1-		1056	.40	.60				
	14	1128 E	1139	N28 E42			1-		1130	.40	.70				
	14	1129 E	1145	N27 E41		38 D	1-	2	1132	.50					
	14	1132 E	1210 D	N28 E43	7404		1-			.40	.60				
	14	1159	1220	N28 E42			1-	3	1205	.70	.90				
	14	1203	1211	N26 E42			1-		1207	.40	.60				
	14	1802 E	1814 D	N28 E39	7404		1-	2	1803	.40	.60				
CAPRI-S HTE-PROVEN CATANIA LOCKHEED LOCKHEED	14	1915	2000 D	N28 E38	7404		1-		1900	.30	.80		10		
	14	1915	2000 D	N28 E38			1-	2	2137	.10	.10		10		
	14	2124	2144	N03 E73			1-	2	2215	.30	.40				
	14	2210	2222	N23 E08			1-	3	0643	.30	.40				
	15	0641	0649	N29 E29			1-		0729	.30	.40				
	15	0725	0733	N28 E30			1-			.20	.40				
	15	0725 E	0735 D	N28 E31			1-								
	16	0200	0225	PATROL											
	16	0305	0340	PATROL											
	16	0500	0530	PATROL											
LOCKHEED LOCKHEED	16	1920	1942	N00 E72			1-	2	1925	.30	.40		10		
	17	0200	0225	PATROL											
	17	0330	0405	PATROL											
	18	0120	0134	N06 E36			1-	2	0124	.30	.30		10		
	18	0155	0500	PATROL											
	19	0200	0210	PATROL											
	21	0530	0550	PATROL											
	22	0105	0115	PATROL											
	22	0135	0145	PATROL											
	22	0430	0435	PATROL											
LOCKHEED MCMATH LOCKHEED MCMATH MITAKA LOCKHEED LOCKHEED LOCKHEED	22	2153	2210	N26 E31			1-	2	2159	.30	.30		10		
	22	2154	2205	N36 W48	7404		1-	2	2157	.20	.30		10		
	22	2155	2220	N34 W48			1-		2159	.30	.40		10		
	23	1813 E	1818 D	N26 W85	7404		1-	1	1814	.20	.90		10		
	23	2357	0007	N08 E82			1-	2	0002	.30			10		
	24	2358	0010	N10 E90			1-	C							
	25	0240	0440	PATROL											
	25	2325	2339	N09 W52			1-	2	2333	.10	.10		10		
	26	1900	1915	N54 W90			1-	2	1906	.30	1.50		10		
	26	1954	2004	N60 W80			1-	2	1957	.30	.90		10		
27	0200	0225	PATROL												

SOLAR FLARES

JULY 1961

OBSERVATORY	DATE JUL Y	OBSERVED UNIVERSAL TIME		LOCATION			SOLAR FLARE MINUTES	IM POR TANCE	OBS COND	MEASUREMENTS			MAX WIDTH H ₀	MAX INT	PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX	LAT	LONG DIST				MEAS AREA Sq Deg	MEAS AREA Sq Deg	COBB AREA Sq Deg			
	1961														
CAPRI-S LOCKHEED LOCKHEED	27	0300	0325	NO FLARE	PATROL										
	27	0400	0415	NO FLARE	PATROL										
	27	1252 E	1303		N09 W25			1-	3	1255	1255	1255	10	1C	
	27	2124	2148		N19 W41			1-	2	2131	2131	2131	10	1C	
	27	2323	2344		S63 E75			1-	2	2328	2328	2328	10	10	
	28	0230	0300	NO FLARE	PATROL										
	29	2015	2020	NO FLARE	PATROL										
	29	2110	2120	NO FLARE	PATROL										
	29	2150	2155	NO FLARE	PATROL										
	29	2240	2245	NO FLARE	PATROL										
	29	2300	2315	NO FLARE	PATROL										
	29	2325	2400	NO FLARE	PATROL										
	30	0000	0005	NO FLARE	PATROL										
MCMATH MCMATH LOCKHEED MCMATH LOCKHEED	31	1505	1515		S05 W44	7424		1-	2	1507	1507	1507	10	10	
	31	1856	1914		N19 W41	7425		1-	1	1859	1859	1859	10	10	
	31	2002	2025		N19 W41	7425		1-	2	2008	2008	2008	10	10	
	31	2003	2030		N19 W43	7425		1-	2	2008	2008	2008	10	10	
	31	2114	2139		N20 W43	7425		1-	2	2125	2125	2125	10	10	
	31	2119	2127		N19 W41			1-	2	2125	2125	2125	10	10	

COMMERCE - STANDARDS - BOULDER

ATHENS ATHENS, CRETE
 BAKOU PRICLI, USSR
 CAPETOWN ROYAL OBSERVATORY,
 CAPE OF GOOD HOPE
 CAPRI F CAPRI, ITALY (GERMAN)
 CAPRI S CAPRI, ITALY (SWEDISH)
 CRIMEE SIMEIZ, USSR
 HERSTMONCEU ROYAL GREENWICH OBSERVATORY,
 HERSTMONCEUX, ENGLAND
 HTE-PROVEN HAUTE-PROVENCE
 NEW SCHAUN FREIBURG, GFR
 HONOLULU HAWAII, USA
 IKOMASAN KYOTO, JAPAN
 KIEV KO KIEV GAO, USSR
 KIEV KY KIEV UNIVERSITY, USSR
 LOCKHEED LOS ANGELES, CALIF., USA
 MCMATH MCMATH-HULEBERT
 FONTIAC, MICH., USA
 MOSCOU MOSCOW-CALISH, USSR
 NEW SCHAUN FREIBURG, GFR
 NERA NEDERHORST den BERGH,
 NETHERLANDS
 NIZMIR KRASNAYA PAKHRA, USSR
 SAC PEAK SACRAMENTO PEAK, N.MEX. USA
 SALTSJOBADEN STOCKHOLM, SWEDEN
 SCHAUNINS SCHAUNINSLAND, GFR
 TASHKENT TASHKENT, USSR
 WENDEL WENDELSTEIN, GFR

ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAC PEAK ARE ARBITRARY UNITS (0-40) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40).
 NOT PERCENT OF CONTINUOUS SPECTRUM.

SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK

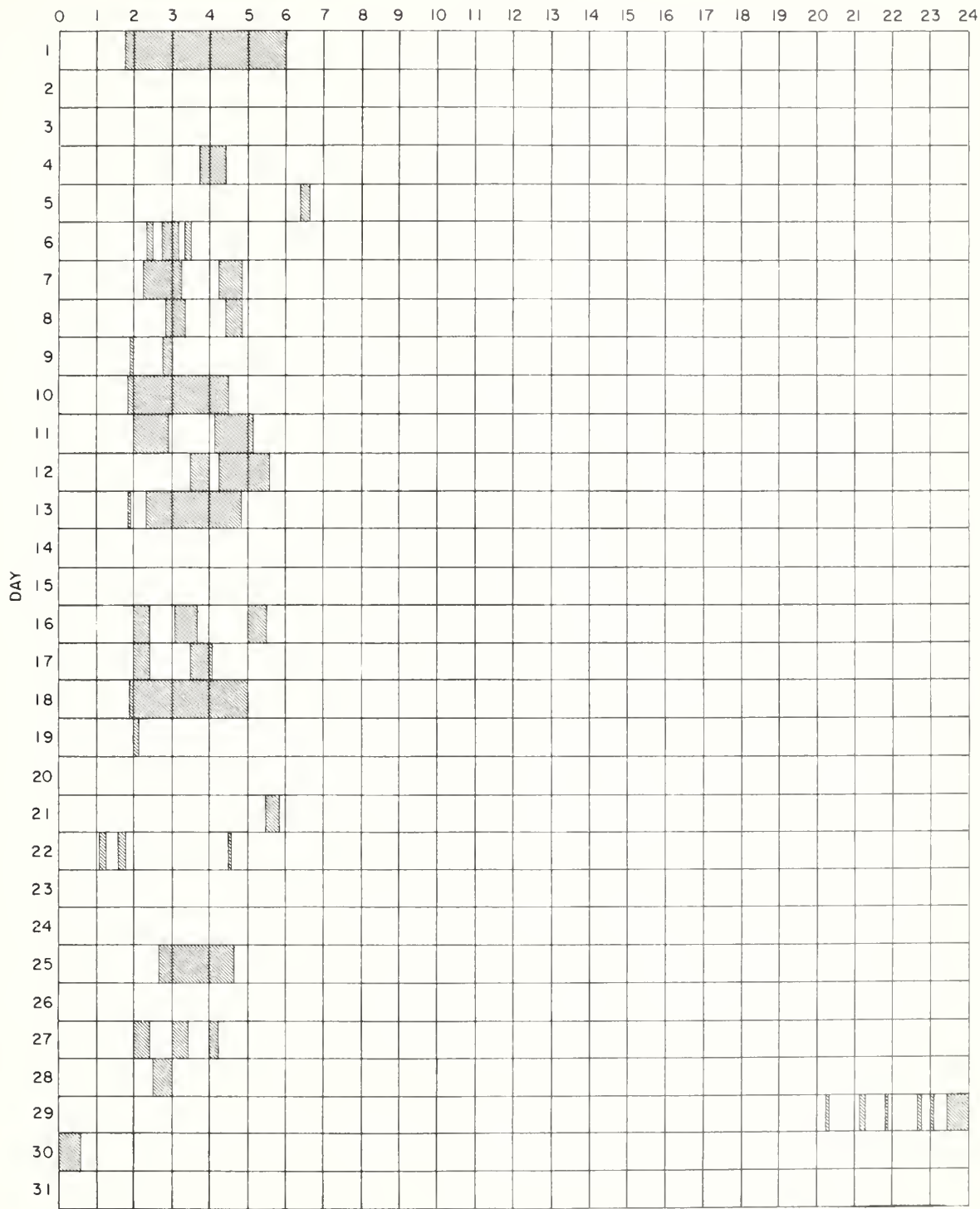
E = LESS THAN D = GREATER THAN U = APPROXIMATE □ = NOT REPORTED.

INTERVALS OF NO FLARE PATROL OBSERVATIONS PROVISIONAL

IIIId

JULY 1961

HOUR - UT



COMMERCE - STANDARDS - BOULDER

Observatories included:

Arcetri	Dunsink	Istanbul	McMath-Hulbert	Sacramento Peak
Arosa	Haute-Provence	Locarno	Mitaka	Wendelstein
Capri-S (Swedish)	Huancayo	Lockheed	Ondrejov	Zurich
Catania	Ikomason	Manila	Ottawa	

SOLAR FLARES

APRIL, 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM FOR- TANCE	OBS COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT	
		START	END	LAT	APPROX MER DIST	HEIGHT PLACE REGION				TIME U T	MEAS AREA Sq Deg	CORR AREA Sq Deg	MAX WIDTH Hr		MAX INT
THESSALONIK	APR 1 1964														
	01	0025	0045	NO FLARE		PATROL		1-	G			1.48		1.31	
	01	0950 E	0956 D	NO FLARE		S06 W24									
SYDNEY	01	1935	1940	NO FLARE		PATROL									
	01	2200	2305	NO FLARE		PATROL									
	03	0248	0305	0259		S08 W46	7195	1	C	0259	3.50	5.10			
	03	1440	1530	NO FLARE		PATROL									
	03	1600	1605	NO FLARE		PATROL									
	03	1620	1635	NO FLARE		PATROL									
MITAKA	03	1645	1655	NO FLARE		PATROL									
	03	1730	1735	NO FLARE		PATROL									
	05	0325	0345	0330		N15 E90		1-	C						
	05	0724	0741	0733		S06 W90	7195	1	C						
	05	1849	1857	1852		N16 E83		1-	C	1852					
	05	2245	2330	NO FLARE		PATROL									
MITAKA	06	0350	0415	0400		N20 E85		1-	C						
	07	0125	0300	0143		N18 E68	7213	3	C	0143	5.40	14.00			72
VOROSHILOV	07	0129 E	0213 D			N16 E66	7213	44 D	C	0137	2.43	6.53			
UCCLE CLIMAX	09	0430	0500	NO FLARE		PATROL		1-							
	09	1517	1518 D			N16 F35		1-							
	09	1518	1532	1523		N16 E31				1523	.40	.40			
SYDNEY	10	0052	0110	0057		N16 E24		1-	C	0057	.60	.70			
	10	0054	0101	0057		N14 E23	7213	7	C	0057	1.40	1.60			
	10	0334	0354	0343		N07 W43		1-	C	0343	.60	.80			
	10	1022	1025			N14 E23		1-							
	10	1208	1218	1211		N15 E20		1-		1211	2.00	2.00			
HONOLULU	11	0054	0138	0111		N16 E11		1-		0111	.90	.90			
LOCARNO	12	1545	1555			N09 E76	7224	1	V						
SYDNEY UCCLE	13	0012 E	0040			N06 E71	7224	28 D	P	0017	.40	1.10			
	13	0026 E	0913 D			N08 E75		1-		0906	.50	1.50			.85
	13	1208 E	1211 D			S56 E17		1-	G			1.32			
THESSALONIK	14	0015	0030 D	0025		N08 E59	7224	15 D	P	0025	1.00	1.80			
	14	0015	0030 D	0025		N11 E62	7224	15 D	P	0025	1.20	2.40			
	14	0023	0028	0025		N06 E58	7224	5	C	0025	.60	1.10			
	14	0750 E	0808 D	0753		N10 E56		1-	C	0753	3.45	6.20			
	14	0750	0814	0753		N11 E56	7224	43	C	0753	1.10	2.10			
	14	0755 E	0810 D			N09 E55	7224	15 D	1						
	14	0752 E	0811 D			N13 E56	7224	19 D	1			4.10			
	14	1220	1306	1232		S09 W20		1	C	1232	2.00	2.20			
	15	0919	0922	0920		N09 E41		1-							
	15	0920 E	0925 D			N10 E43		1-	3						
	15	0920 E	0925 D			N10 E43		1-	3						
	15	0920 E	0925 D			N10 E43		1-	3						
	15	0920 E	0925 D			N10 E43		1-	3						
	15	0920 E	0925 D			N10 E43		1-	3						

COMMERCE - STANDARDS - BOULDER

SOLAR FLARES

APRIL 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT	
		START	END	APPROX LAT. MER DIST	MEMATH PLACE REGION				TIME U T	MEAS AREA Sq Deg	CORR AREA Sq Deg	MAX WIDTH H _z		MAX INT
UCCLE	APRIL 1964													
	15	1056	1103	S14 W03			1-							
	15	1415	1417	N10 E17			1-							
	15	1451	1455	N10 E17			1-							
	16	1049	1055	S14 W16			1-							
UCCLE	16	1103	1106	S14 W16			1-							
OTTAWA	17	0115	0150	NO FLARE	PATROL									
	18	1341 E	1356 D	NO FLARE	N10 W01	7224	1	C	1345	•55	•55			
	18	1900	2230	NO FLARE	PATROL									
	19	1825	1830	NO FLARE	PATROL									
	19	1940	2140	NO FLARE	PATROL									
UCCLE	19	2145	2150	NO FLARE	PATROL									
	19	2200	2240	NO FLARE	PATROL									
	19	2300	2310	NO FLARE	PATROL									
	19	2335	2340	NO FLARE	PATROL									
	20	0244	0310	0248	N30 E26		1-	C						
UCCLE	20	0905	0908	S08 E37		1-								
UCCLE	20	1100	1104	S09 E37		1-								
UCCLE	20	1550 E	1556	S06 E33		1-								
	20	1628	1645	S06 E33		1-								
	20	1710	1935	NO FLARE	PATROL									
	20	1945	2035	NO FLARE	PATROL									
	20	2040	2125	NO FLARE	PATROL									
CATANIA	20	2130	2250	NO FLARE	PATROL									
	21	0713 E	0835 D	S07 E23	7244		1+	3	0930	1.60	1.70			
	21	0910 E	0935 D	S09 E21		1-	1-	2	0923	2.43	2.67	1.50		
	21	0917	0933	S09 E24	7244		1-							
	21	0921	0923	S09 E21		1-	1-							
UCCLE	21	1146	1152	S07 E20		1-	1-							
UCCLE	21	1423	1430	S08 E17		1-	1-							
ARCETRI	21	1430 E	□	S09 E21		1-	1-	3	1430	•20	•20			
IKOMASAN	22	0530	□	S09 E13	7244		1	P	0530	5.00	5.10			
	22	1730	1755	NO FLARE	PATROL									
CATANIA	24	0800 E	0815 D	S07 W25	7244		1							
CLIMAX	25	2047	2050 D	S10 W45			1-							
	25	2210	2220	NO FLARE	PATROL									
	25	2300	2330	NO FLARE	PATROL				2049	•60	•70			
	29	0215	0240	NO FLARE	PATROL									

COMET - 6 STANDARD - BOULDER

SOLAR FLARES

APRIL 1964

These flares are addenda to the April 1964 flares published in GRPL-F 237 for May 1964.

ATHENS	ATHENS, GREECE	HONOLULU	HAWAII, USA	NERA	NEDERHORST den BERGH,
BAKOU	PIRCULI, USSR	IKOMASAN	KYOTO, JAPAN		NETHERLANDS
CAPETOWN	ROYAL OBSERVATORY, CAPE OF GOOD HOPE	KIEV KO	KIEV GAO, USSR	MIZMIR	KRASNAYA PAKHRA, USSR
GAPRI F	CAPRI, ITALY (GERMAN)	KIEV KY	KIEV UNIVERSITY, USSR	SAG PEAK	SACRAMENTO PEAK, N.MEX. USA
GAPRI S	CAPRI, ITALY (SWEDISH)	LOCKHEED	LOS ANGELES, CALIF., USA	SALTSJÖRADEN	STOCKHOLM, SWEDEN
GRIMEE	SIMEIZ, USSR	MCMATH	MCMATH-HULBERT	SCHAUINS	SCHAUINSLAND, GFR
HERSTMONGEU	ROYAL GREENWICH OBSERVATORY, HERSTMONGEU, ENGLAND	MOSCOU	PONTIAG, MICH., USA	TACHKENT	TASHKENT, USSR
HTE-PROVEN	HAUTE-PROVENCE	NEW SCHAUIN FREIBURG, GFR	MOSCOM-GAISH, USSR	WENDEL	WENDELSTEIN, GFR

ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAG PEAK ARE ARBITRARY UNITS (0-40) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40), NOT PERCENT OF CONTINUOUS SPECTRUM.

SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK.

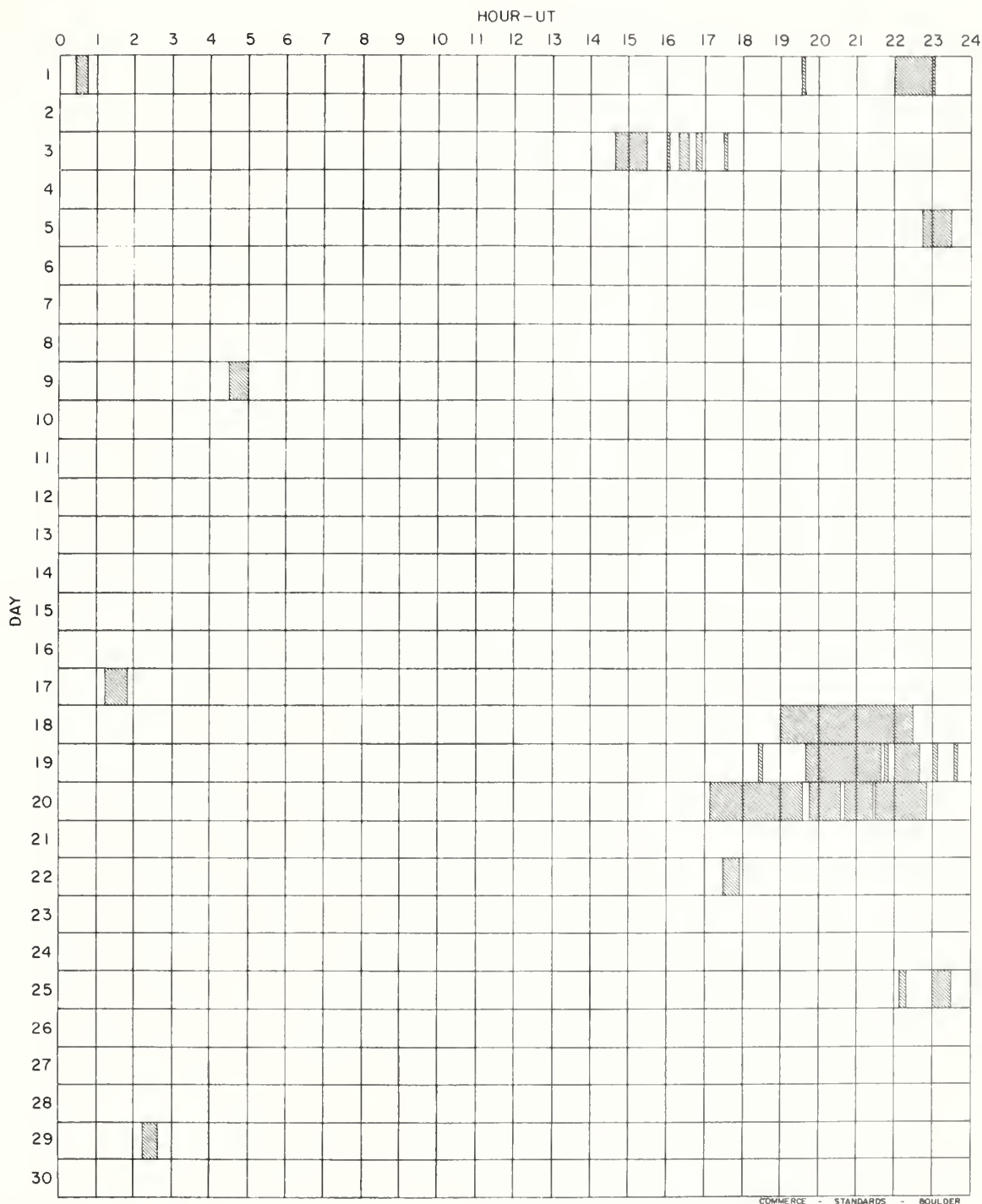
COMMERCE - STANDARDS - BOULDER

E = LESS THAN D = GREATER THAN U = APPROXIMATE □ = NOT REPORTED.

INTERVALS OF NO FLARE PATROL OBSERVATIONS

IIIh

APRIL 1964



Observatories included:

Abastumani	Capri-S (Swedish)	Honolulu	Kodaikanal	Mitaka	Tachkent
Arcetri	Climax	Ikomasan	Locarno	Nizamiah	Uccle
Arosa	Crimee	Irkutsk	Lockheed	Ondrejov	Voroshilov
Bucharest	Dunsink	Istanbul	Lvov	Ottawa	Wendelstein
Capetown	Haute-Provence	Izmiran	Manila	Sacramento Peak	Wroclaw
Capri-F (German)	Herstmonceux	Kiev-KO	McMath-Hulbert	Sydney	Zurich

SOLAR FLARES

JANUARY, FEBRUARY, MARCH 1961

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA TION — MINUTES	IM- POR TANCE	OBS COND	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX LAT	APPROX LONG	APPROX DIST				TIME U T	MEAS AREA Sq Deg	CORR AREA Sq Deg	MAX WIDTH Ha	
JANUARY CATANIA	1964													
	14	1052 F	1100	S02 W85				1-						
CATANIA	29	0920 F	□	S03 W58				1-						
FEBRUARY CATANIA	04	1158 E	1212	N45 E21				1-						
	21	1125 F	1128 D	N10 F02	7108		30	1						
	22	1100 E	1136 D	N08 E27	7161		250	1						
	24	1008 E	□	N08 F02				1-						
	28	0925 E	□	S07 F55				1-						
	28	1014 F	□	N03 W60	7148			1						
CATANIA	28	1018 F	□	N07 W55	7168			2						
MARCH CATANIA	05	1115 F	1150 D	N10 W25				1-						
	12	0905 F	0915 D	S03 W55				1-						
	12	1013 E	1015 D	N42 W05	7180		20	1						
	13	1055 F	1133 D	N42 W20				1-						
	16	0818 E	□	N04 W72	7182			1						
	22	0804 F	0810 D	N10 W23				1-						
	24	0815 F	0850 D	N07 E47	7192		350	1+						
	CATANIA													

COMMENCE - STANDARDS - BOLDER

These flares are addenda to those published in ORPL-F 234, 235, 236, 237, 238 and 239 Part B for February, March, April, May, June and July 1964.

IONOSPHERIC EFFECTS OF SOLAR FLARES

IIIj

SHORT WAVE RADIO FADEOUTS SUDDEN PHASE ANOMALIES
 SUDDEN COSMIC NOISE ABSORPTION SUDDEN ENHANCEMENTS OF SIGNAL
 SUDDEN ENHANCEMENTS OF ATMOSPHERIC SUDDEN FREQUENCY DEVIATIONS
 SOLAR NOISE BURSTS AT 18 Mc/s

JUNE 1964

JUNE 1964	UNIVERSAL TIME			TYPE SWF IMP	IMPORTANCE						BUR	WIDE SPREAD INDEX	STATIONS	KNOWN FLARE
	START	END	MAX		ABS	SCNA	SEA	SPA	SES	SFD				
None observed.														

COMMERCE - STANDARDS - BOULDER

RIOMETER EVENTS

(Provisional)

JUNE 1964

South Pole

26 Mc/s

JUNE 1964	START UT	END UT	MAX. UT	MAX. ABSORP. db, (tenths)	NO. OF PEAKS	JUNE 1964	START UT	END UT	MAX. UT	MAX. ABSORP. db, (tenths)	NO. OF PEAKS
1	1218	2053	1618	9	5	17	0328	0412	0400	5	1
2	0127	1925	0952	5	4	17	1441	1602	1514	3	2
3	1009	1504	1129	3	1	18	0306	0348	0317	6	1
4	0849	1150	0949	5	2	18	1133	1500	1418	4	2
5	0227	0436	0247	14	1	18	2208	2342	2216	10	2
6	0929	1633	1056	4	6	19	2315	0616	2353	6	4
7	*					20	1106	1221	1146	4	1
8	0203	0307	0231	3	4	21	0105	0316	0112	30	3
8	0905	1246	0923	7	1	21	0952	1314	1134	4	2
9	0154	1649	1217	4	16	22	1406	1832	1643	5	3
10	0129	0413	1205	26	5	23	0549	1729	1408	7	6
11	0756	1826	1432	6	3	23	2218	0154	2348	28	1
12	0228	**	0236	54	0	24	2014	2128	2107	5	2
13	0020	0224	0115	27	3	25	0017	1811	0028	38	2
13	0638	1946	1112	28	2	26	0054	0326	0205	41	1
13	2150	2317	2232	3	2	26	0852	0300	2322	41	1
14	0452	0632	0530	11	1	27	0730	1809	1434	12	13
14	0850	1818+	0031+	13	3	27	2143	2335	2244	5	2
16	0101	0746	0128	27	1	28	1012	1358	1130	22	1
						28	1833	1845	1837	4	2
						29	0941	0427	1206	14	1
						30	1752	0335	0149	15	2

COMMERCE - STANDARDS - BOULDER

* No event
 ** Uncertain
 + June 15, 1964

SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

IVa

JULY 1964

ARO - OTTAWA

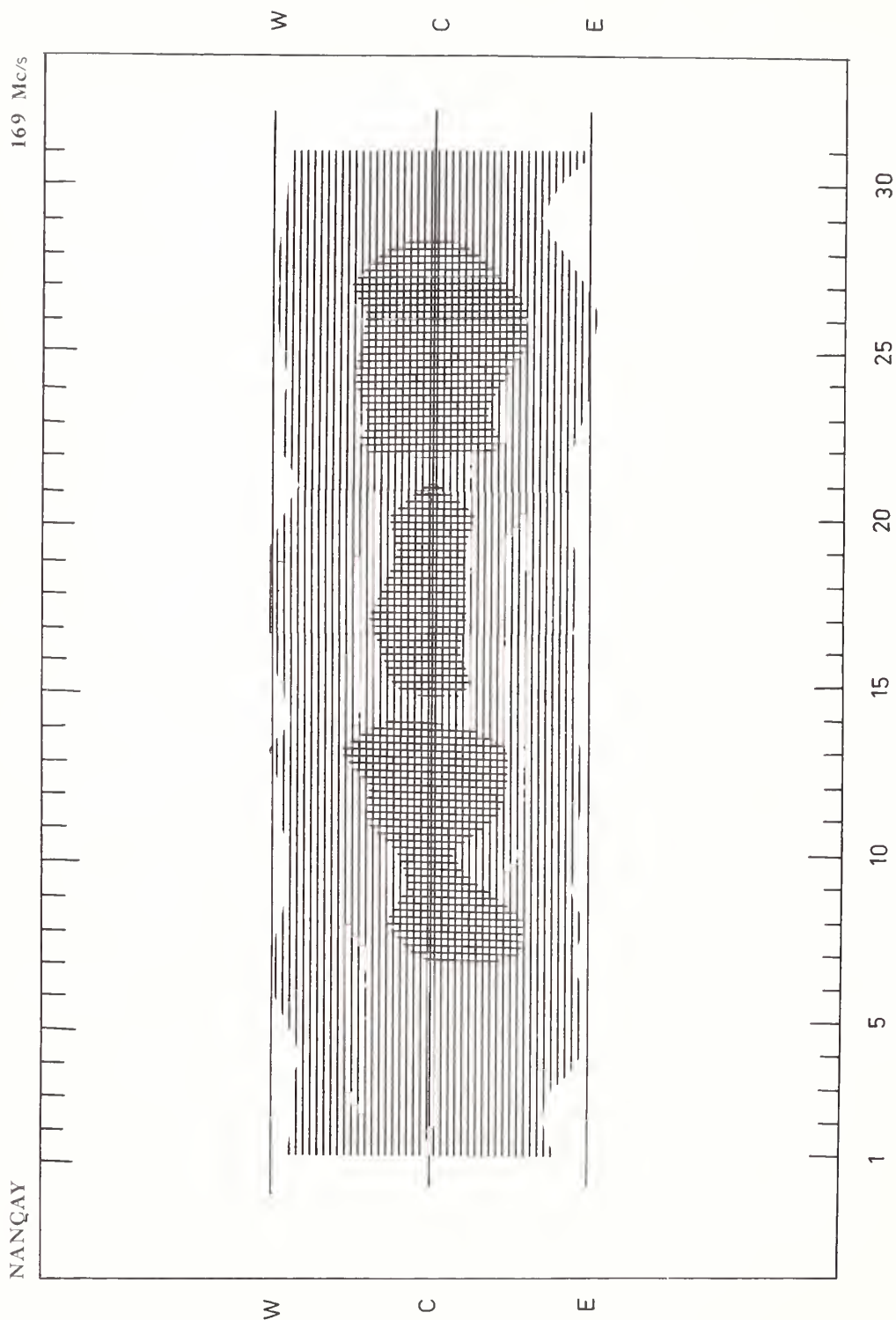
2800 Mc/s

JULY 1964	U R A N E	DESCRIPTIVE TYPE	START UT	DURATION HRS. MIN.	MEAN FLUX	MAXIMUM		REMARKS
						TIME	FLUX	
None observed.								

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATIONS

JULY 1964



JULY 1964

SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

IVc

JULY 1964

NBS BOULDER

108 Mc s

None observed.

NOMINAL TIMES OF OBSERVATION

JULY 1964

NBS BOULDER

108 Mc s

1964 July	HOURS OF OBSERVATION U.T.	HOURS OF INTERFERENCE U.T.	July 1964	HOURS OF OBSERVATION U.T.	HOURS OF INTERFERENCE U.T.
1	1140-1618; 1645-0210		16	1149-2302	
2	1140-1245; 1300-0210	1755-2045	17	1150-0206	2355-0111
3	1141-0209		18	1151-0205	
4	1141-0209	2150-2235; 2335-2400	19	1152-2150; 2203-0204	
5	1142-0209	2040-2205; 2345-0058	20	1152-0204	
6	1142-0209	1924-1940; 2009-2012	21	1153-0203	2313-0000
7	1143-0208		22	1154-0202	1444-1447; 1824-2224
8	1144-0208	2004-2025; 2147-2250	23	1155-0201	2103-2230
9	1144-0208	2330-0130	24	1156-0201	
10	1145-0207		25	1157-0200	0032-0200
11	1145-0208	2300-2330	26	1157-0159	
12	1146-0207		27	1158-0159	
13	1147-0207	2145-2225; 0130-0145	28	1159-0127	2213-0127
14	1148-1629; 1644-0207		29	1550-0157	1947-0157
15	1148-2302	2120-2302	30	1201-0156	1748-1830; 2352-0010
			31	1202-0155	1330-1332; 2342-0028

COMMERCE - STANDARDS - BOULDER

Note: Most of the interference is due to atmospherics.

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

APRIL 1964

Fort Davis

50-320 Mc/s

1964	OBSERVING HOURS	IMPORTANT BURSTS			FREQUENCY RANGE MC	REMARKS
		TYPE	TIMES U.T	INT		
Apr. 1	1305-2300					
Apr. 2	1305-2300					
Apr. 3	1306-2300					
Apr. 4	1305-2300					
Apr. 5	1306-2300					
Apr. 6	1305-2300					
Apr. 7	1305-2300					
Apr. 8	1306-2300					
Apr. 9	1305-2300					
Apr. 10	1305-2300					
Apr. 11	1305-2300					
Apr. 12	1305-2300					
Apr. 13	1305-2300					
Apr. 14	1305-2300					
Apr. 15	1306-2130 2132-2300					
Apr. 16	1306-2300					
Apr. 17	1306-2300					
Apr. 18	1307-2300					
Apr. 19	1306-2300					
Apr. 20	1307-2300					
Apr. 21	1307-2300					
Apr. 22	1307-2300					
Apr. 23	1307-2300					
Apr. 24	1307-2300					
Apr. 25	1307-2300					
Apr. 26	1254-2300					
Apr. 27	1254-2300					
Apr. 28	1645-2300					
Apr. 29	1300-2300					
Apr. 30	1301-2300					

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

IVc

MAY 1964

Fort Davis

50-320 Mc/s

1964 <small>1964 MAY 1964</small>	OBSERVING HOURS	IMPORTANT BURSTS			FREQUENCY RANGE MC	REMARKS
		TYPE	TIMES U. T.	INT		
May 1	1300-2300					
May 2	1300-2300					
May 3	1300-2300					
May 4	1300-2300					
May 5	1300-2300					
May 6	1301-2300					
May 7	1300-2300					
May 8	1300-2300					
May 9	1300-2300					
May 10	1300-2300					
May 11	1300-1619 1845-2300					
May 12	1300-2300					
May 13	1300-2300					
May 14	1300-2300					
May 15	1300-2300					
May 16	1300-2300					
May 17	1300-2300					
May 18	1301-2300					
May 19	1301-2300					
May 20	1300-2300					
May 21	1300-2300					
May 22	1300-2300					
May 23	1300-2300					
May 24	1300-2300					
May 25	1300-2300					
May 26	1300-2300					
May 27	1300-2300					
May 28	1300-2300					
May 29	1300-2300					
May 30	1300-2300					
May 31	1300-2300					

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JUNE 1964

Fort Davis

50-320 Mc/s

1964	OBSERVING HOURS	IMPORTANT BURSTS			FREQUENCY RANGE MC	REMARKS
		TYPE	TIMES U.T.	INT		
June 1	1230-2230					
June 2	1230-2230					
June 3	1230-2230					
June 4	1230-2230					
June 5	1230-2230					
June 6	1230-2230					
June 7	1230-2230					
June 8	1230-2230					
June 9	1230-2230					
June 10	1230-2230					
June 11	1507-2230					
June 12	1230-2230					
June 13	1230-2230					
June 14	1230-2230					
June 15	1230-2230					
June 16	1230-2230					
June 17	1230-2230					
June 18	1230-2230					
June 19	1230-2230					
June 20	1230-2230					
June 21	1230-2230					
June 22	1230-2230					
June 23	1230-2230					
June 24	1230-1955 2004-2230					
June 25	1230-2230					
June 26	1230-2230					
June 27	1230-2230					
June 28	1230-2230					
June 29	1230-2230					
June 30	1230-2230					

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

IVg

JULY 1964

High Altitude Observatory
Boulder

7.6-41 Mc/s

Date July 1964	Bursts			Frequency Range (Mc/s)
	Type	Time (U.T.)	Inten- sity	
7	III	1420:30-1421:30	1+	15-41

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JULY 1961

STANFORD

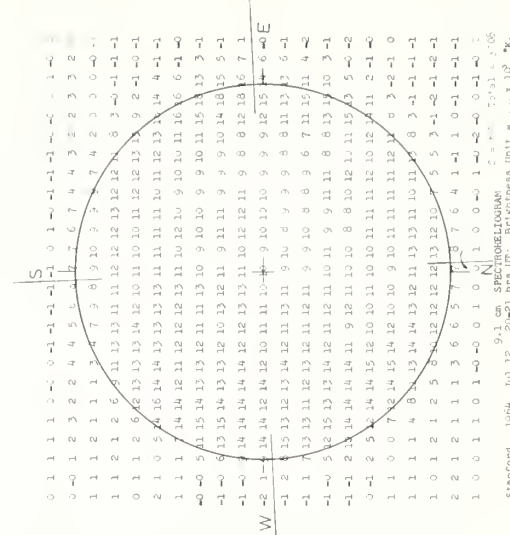
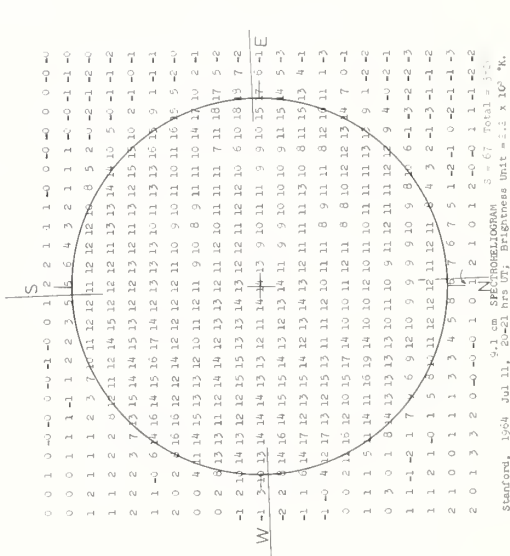
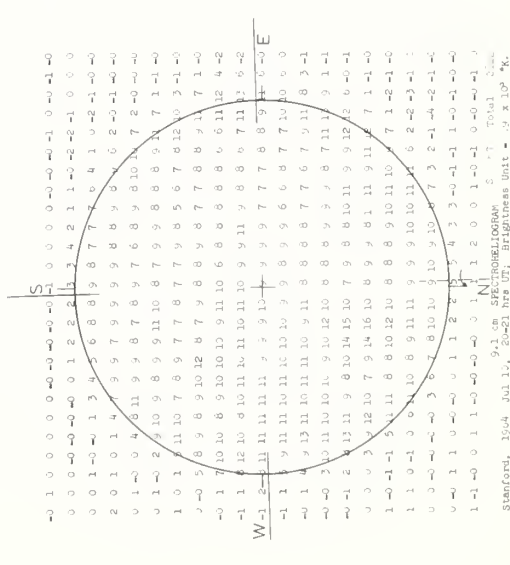
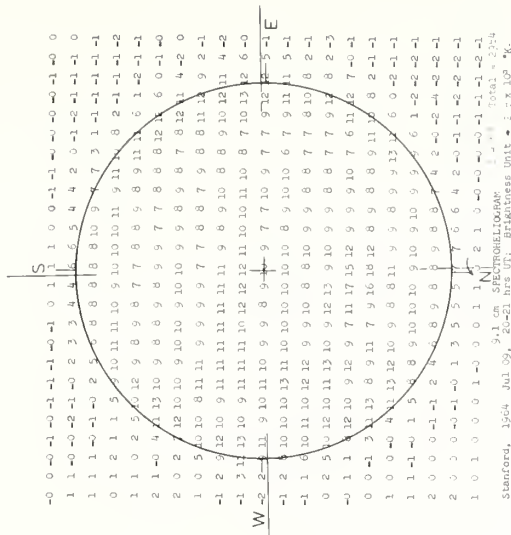
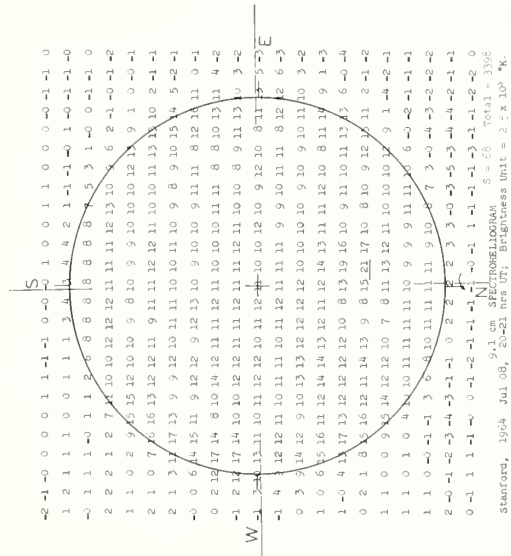
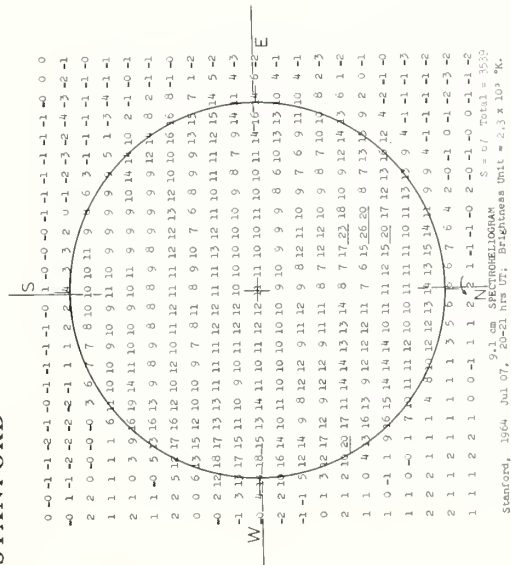
9.1 cm

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JULY 1964

STANFORD

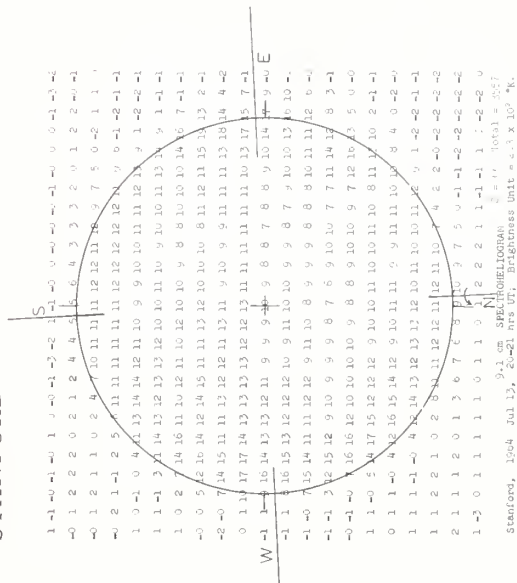
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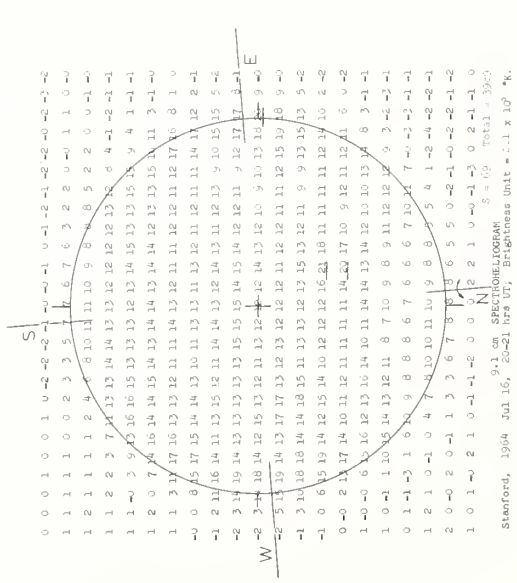
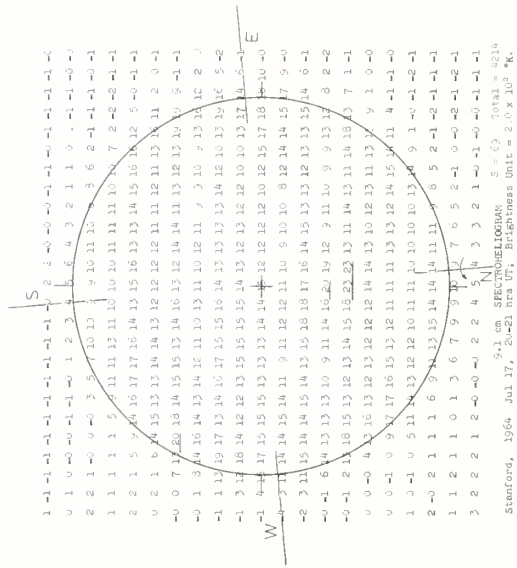
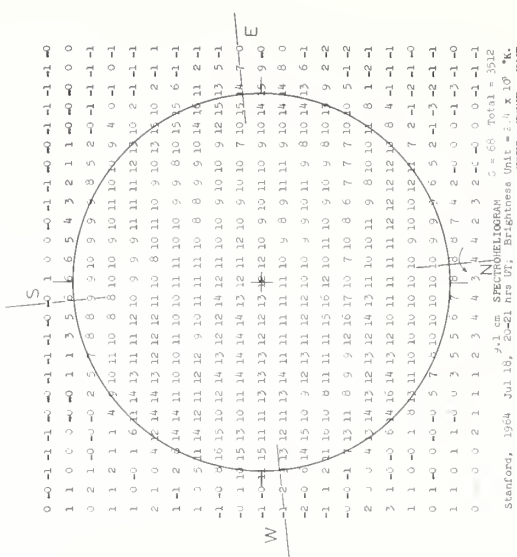
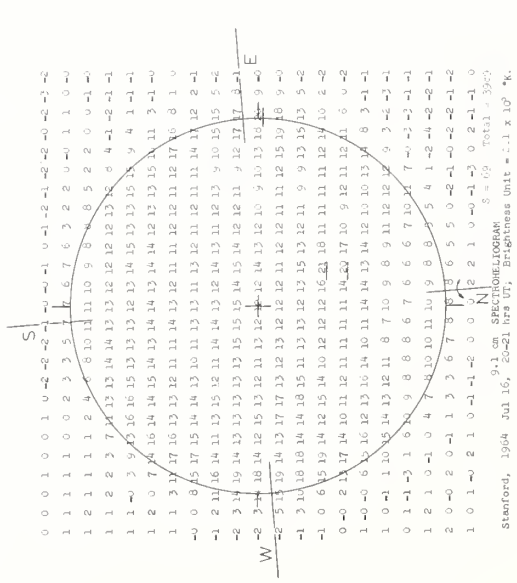
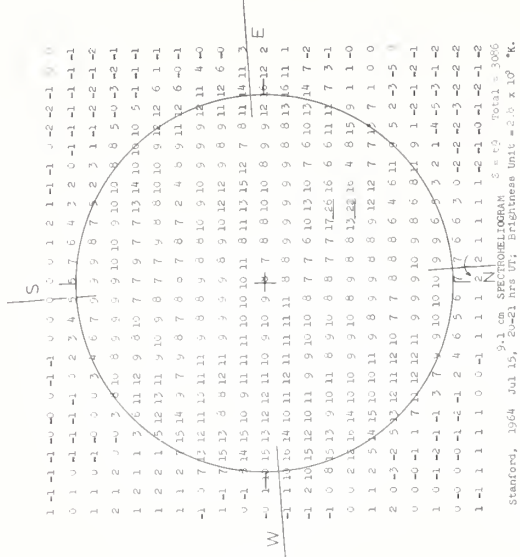
SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JULY 1964

STANFORD



9.1 cm

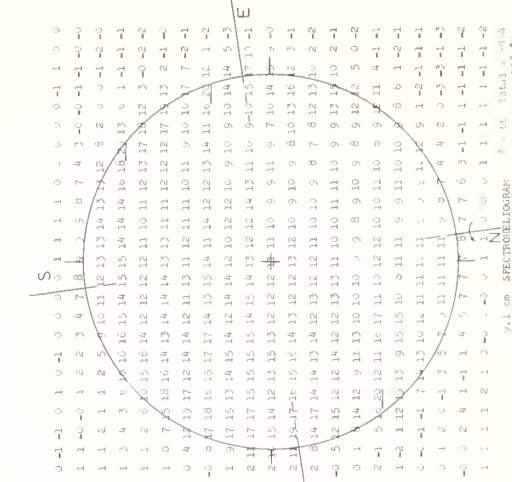
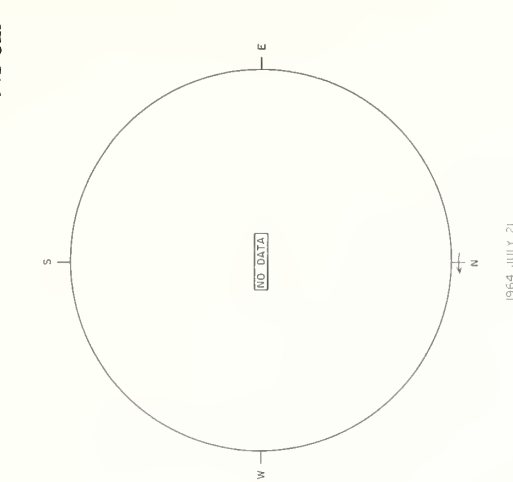
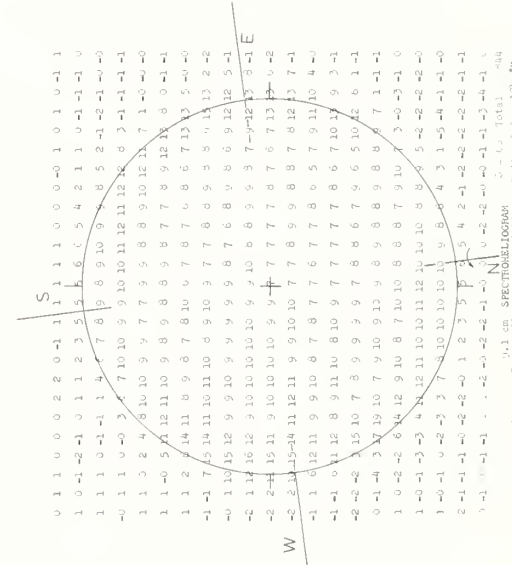
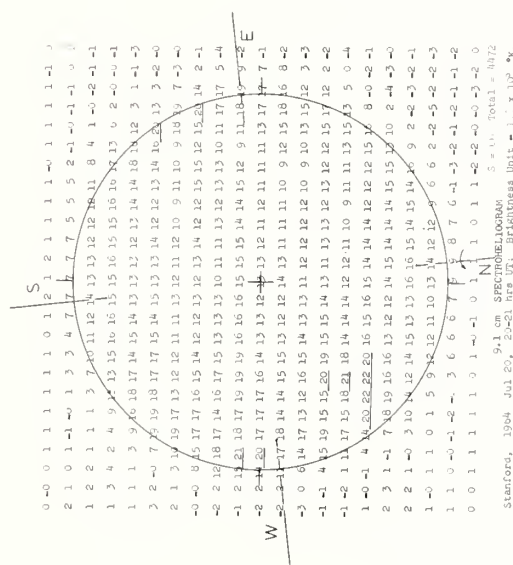
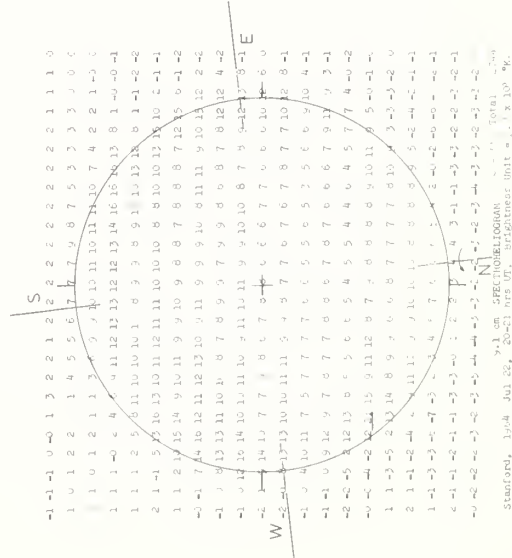
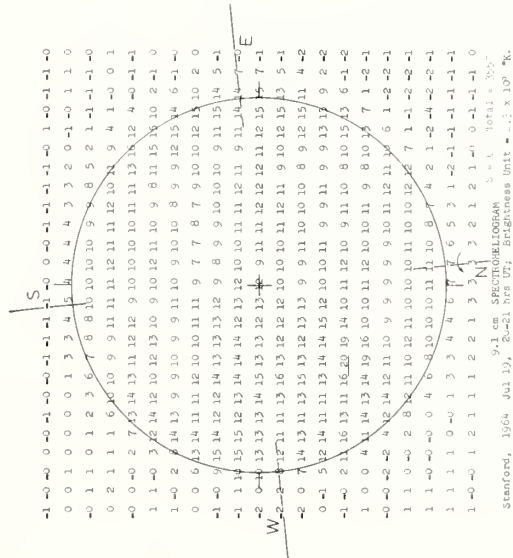


SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JULY 1964

STANFORD

9.1 cm

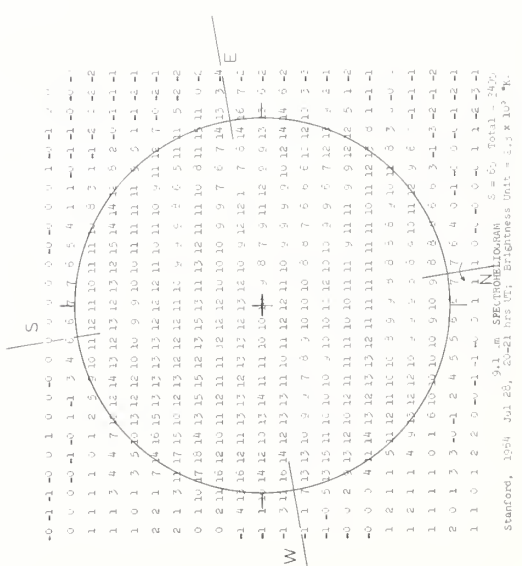
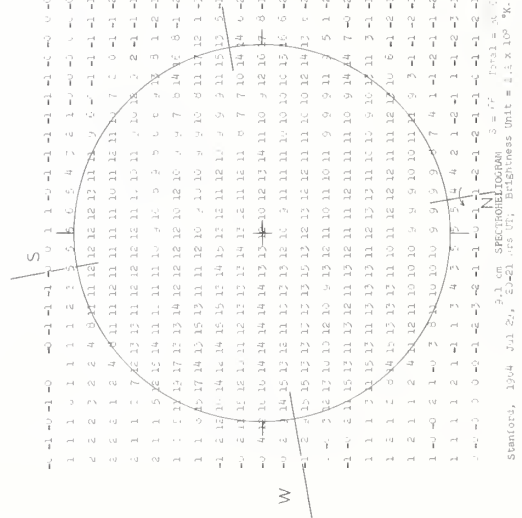
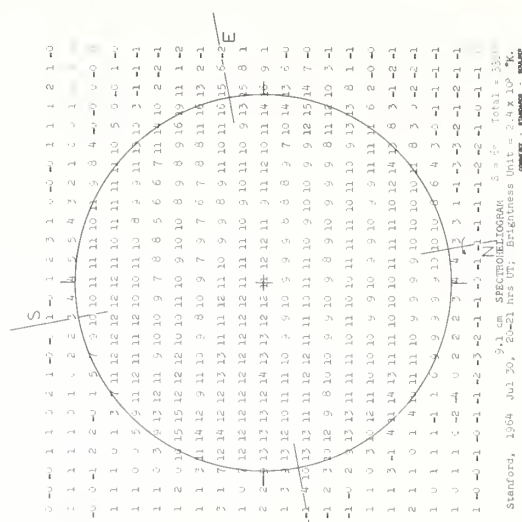
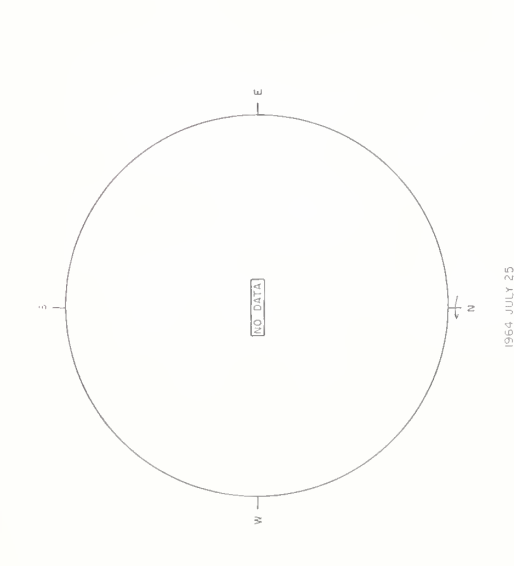
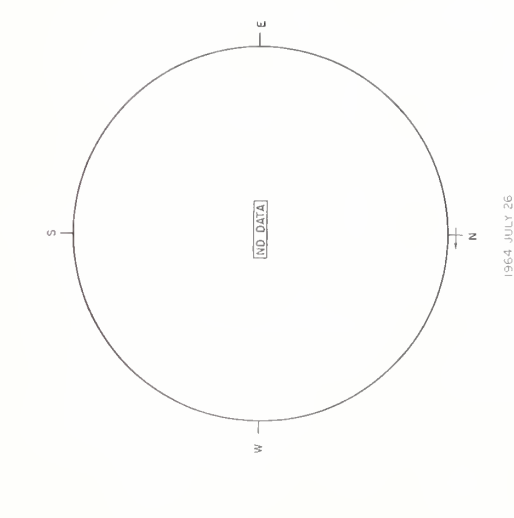
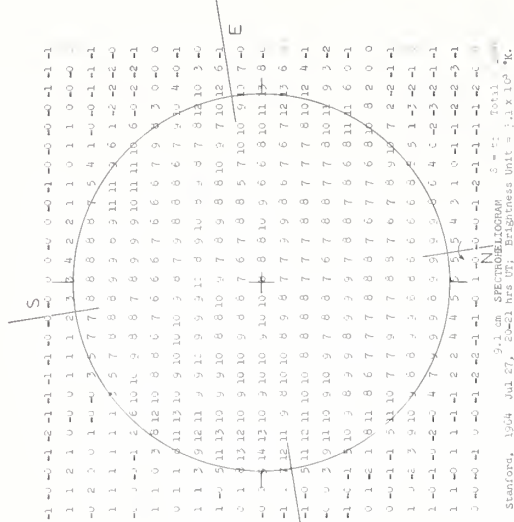


SOLAR RADIO EMISSION SPECTROHELIOGRAMS

1 JUL 1964

STANFORD

9.1 cm



1964 JULY 26

1964 JULY 25

Stanford, 1964 Jul 27, 8:21 hrs UT; Brightness Unit = 1.1×10^4 W.

Stanford, 1964 Jul 26, 8:21 hrs UT; Brightness Unit = 4.1×10^4 W.

Stanford, 1964 Jul 25, 8:21 hrs UT; Brightness Unit = 4.1×10^4 W.

Stanford, 1964 Jul 27, 8:21 hrs UT; Brightness Unit = 1.1×10^4 W.

Stanford, 1964 Jul 26, 8:21 hrs UT; Brightness Unit = 4.1×10^4 W.

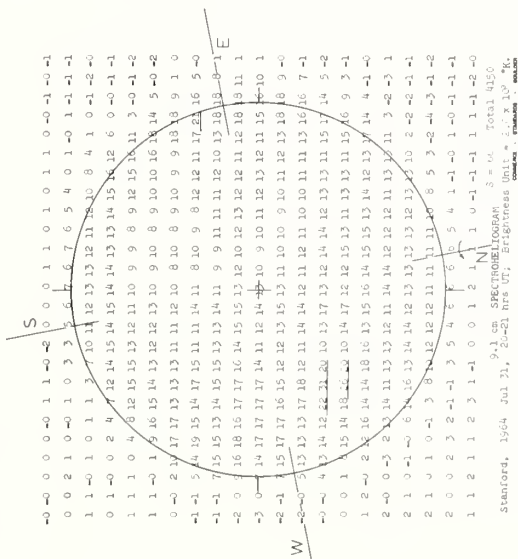
Stanford, 1964 Jul 25, 8:21 hrs UT; Brightness Unit = 4.1×10^4 W.

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JULY 1964

STANFORD

9.1 cm



COSMIC RAY INDICES
(Climax Neutron Monitor)
IGC Station B 305

JUNE 1964

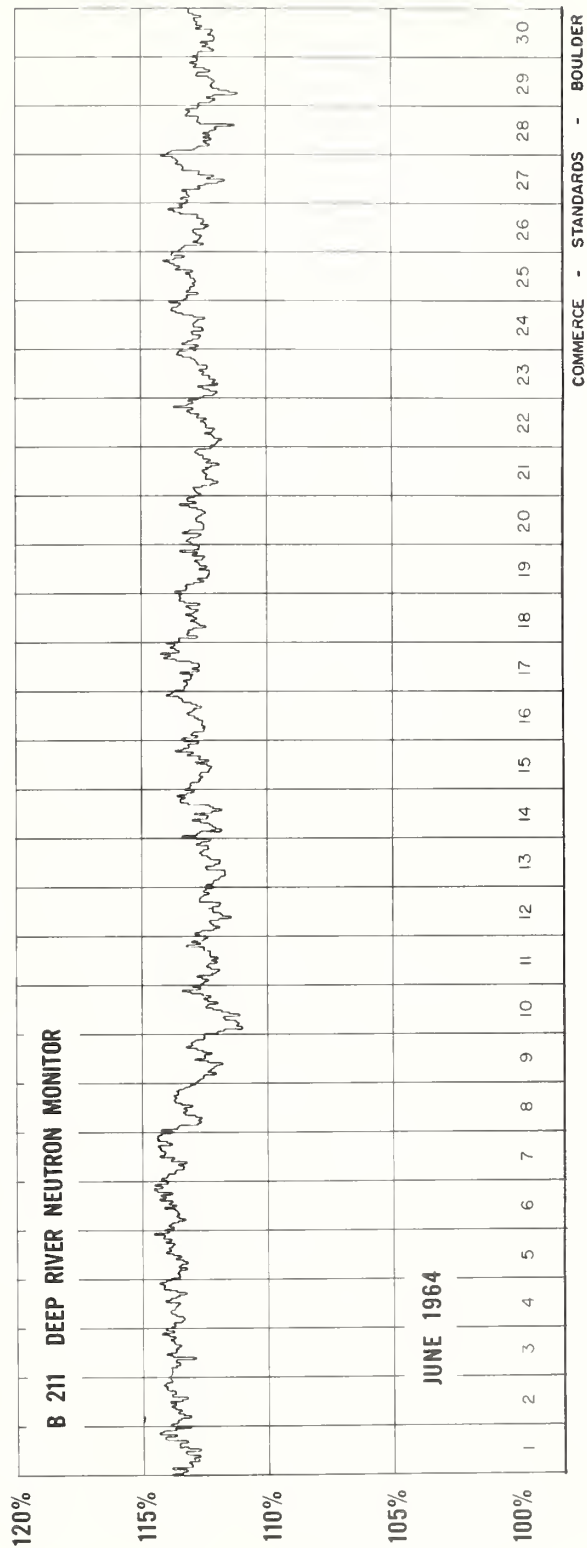
June 1964	DAILY AVERAGE COUNTS / HOUR *	June 1964	DAILY AVERAGE COUNTS / HOUR *
1	3289.0	16	3282.4 **
2	3287.1	17	3299.9 **
3	3289.6	18	3298.0 **
4	3286.4	19	3287.8
5	3293.2	20	3296.4 **
6	3305.3	21	3288.3 **
7	3314.6	22	3269.2 **
8	3304.5 **	23	3270.7 **
9	3276.6	24	3274.7
10	3287.7 **	25	3285.0
11	3290.7	26	3287.7
12	3281.3	27	3286.2
13	- -	28	3289.3
14	3293.7 **	29	3291.3 **
15	3286.2	30	3279.1

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* Scaling Factor 128

** No. of Section Hours Less Than 40.

COSMIC RAY INDICES **(Pressure Corrected Hourly Totals)**



GEOMAGNETIC ACTIVITY INDICES

JUNE 1964

June 1964	C	Values Kp								Sum	Ap	Final Selected Days	
		Three hour Gr. interval											
		1	2	3	4	5	6	7	8				
1	0.3	0+	1+	1o	1o	2o	2-	1o	2-	10o	5	Five Quiet	
2	0.2	1-	1o	1o	1-	1+	1+	1+	1o	8+	4		
3	0.2	1o	1+	1-	1o	1o	0+	0+	1o	7-	4		
4	0.2	2-	1-	1+	1+	1o	2-	1o	1-	9+	4		3
5	0.1	1-	1-	0+	1-	1-	1o	1o	0+	5+	3		5
6	0.1	0+	1o	1-	2-	2o	0+	0+	1-	7o	4	6	
7	0.3	0+	0+	0+	0+	1o	0+	3-	3o	8+	5	16	
8	0.5	3-	2+	3o	3-	2-	1o	2-	1+	16+	9	30	
9	0.6	2-	2-	2-	2o	3-	3o	2-	1+	16-	8		
10	1.5	3-	7-	6+	6-	5o	3o	3+	4o	37-	49		
11	1.2	5-	5-	3+	4-	3+	4o	3-	4-	30o	25	Five Disturbed	
12	0.8	3o	3-	2+	3o	3o	3o	2o	3-	22-	12		
13	0.7	3-	3-	2+	3o	2-	2o	2-	2o	18o	9		
14	0.4	1+	2+	2+	2-	2-	1o	2-	2+	14+	7		10
15	0.3	3o	2o	1+	1o	1o	1+	1o	2-	12+	6		11
16	0.1	2-	1o	1-	1o	0+	1o	1o	1o	8-	4	12	
17	0.1	0+	1+	2-	1o	2-	1-	0+	0+	7+	4	20	
18	0.5	1-	0+	1-	2o	3o	1+	2+	3-	13o	7	21	
19	0.3	1-	0+	0+	1+	1-	1o	2-	3-	9-	5		
20	0.9	3-	3-	2-	3-	5o	3o	4-	2-	23o	17		
21	0.8	4o	2-	3-	3+	1o	2-	3o	0+	18-	11	Ten Quiet	
22	0.4	0+	1-	0+	1o	2-	3-	2o	2o	11-	5		
23	0.4	2-	1+	1+	2-	2o	1+	1+	2+	13o	6		
24	0.3	2-	1-	1-	0+	1-	1o	3o	2o	10o	5		1
25	0.6	2+	3+	4o	2+	2o	1o	1+	1o	17+	10		2
26	0.4	1o	2-	2o	2-	2-	1+	1-	1+	11+	5	3	
27	0.3	0+	0+	1o	1o	2+	2o	2-	2o	11-	5	4	
28	0.7	1-	1+	1+	2+	3+	4-	3+	1+	17+	11	5	
29	0.4	1+	1+	2-	3-	1+	2+	1+	0o	12o	6	6	
30	0.1	1-	2-	0+	1-	1-	0+	1o	1o	6+	3	16	
												17	
												19	
												30	
Mean:	0.46									Mean:	9		

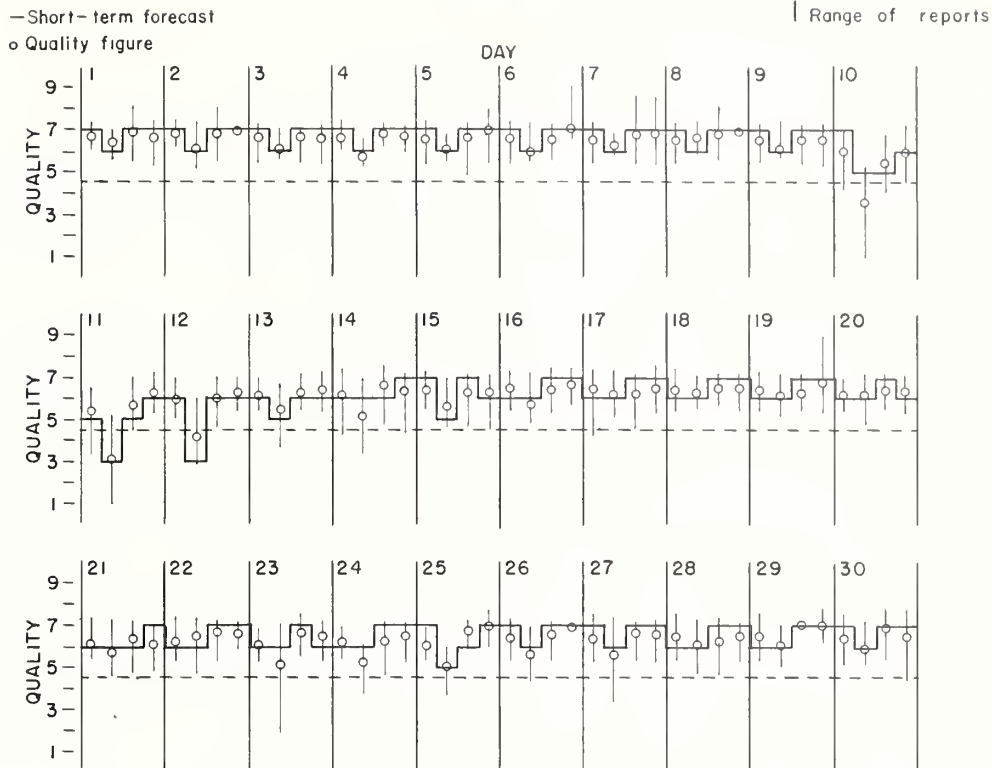
NORTH PACIFIC

[illegible]

COMMERCE	•	STANDARDS	•	BOULDER
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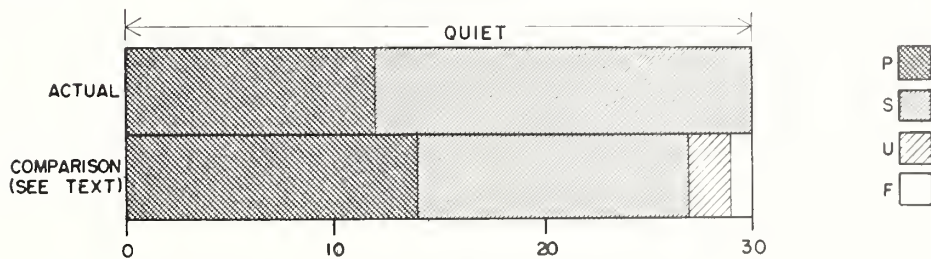
NORTH ATLANTIC

JUNE 1961

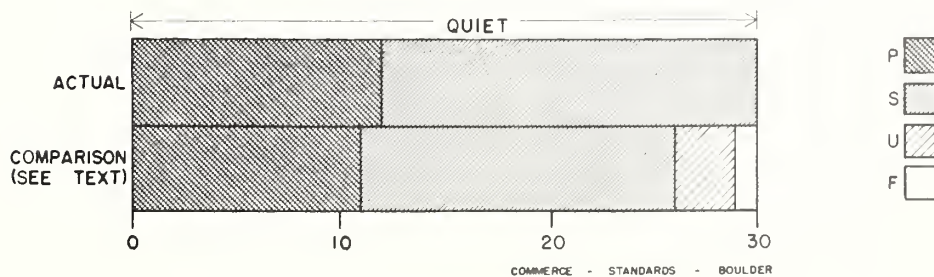


OUTCOME OF ADVANCE FORECASTS--FINAL ESTIMATES (1 TO 7 DAYS AHEAD)

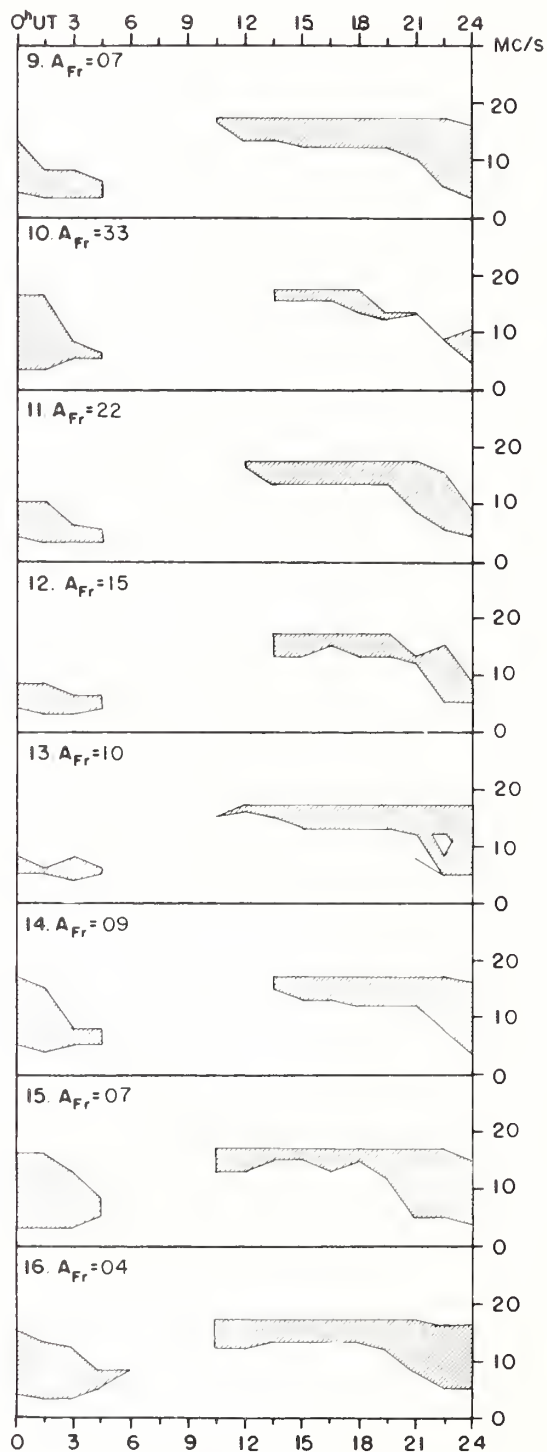
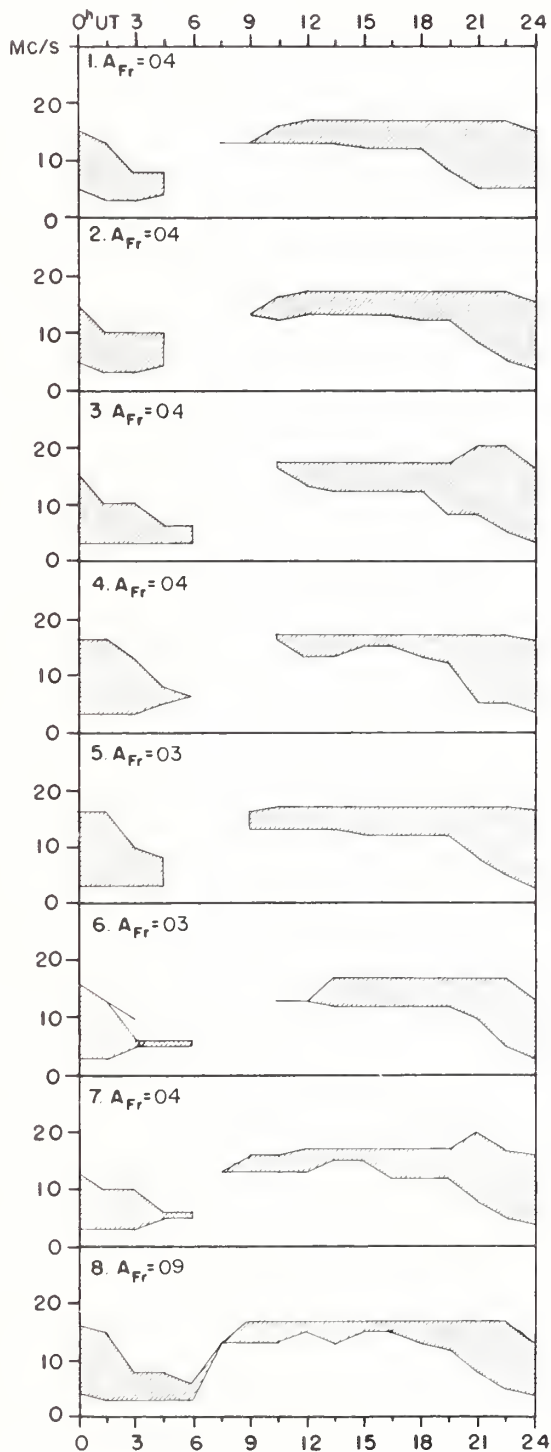
NORTH ATLANTIC



NORTH PACIFIC

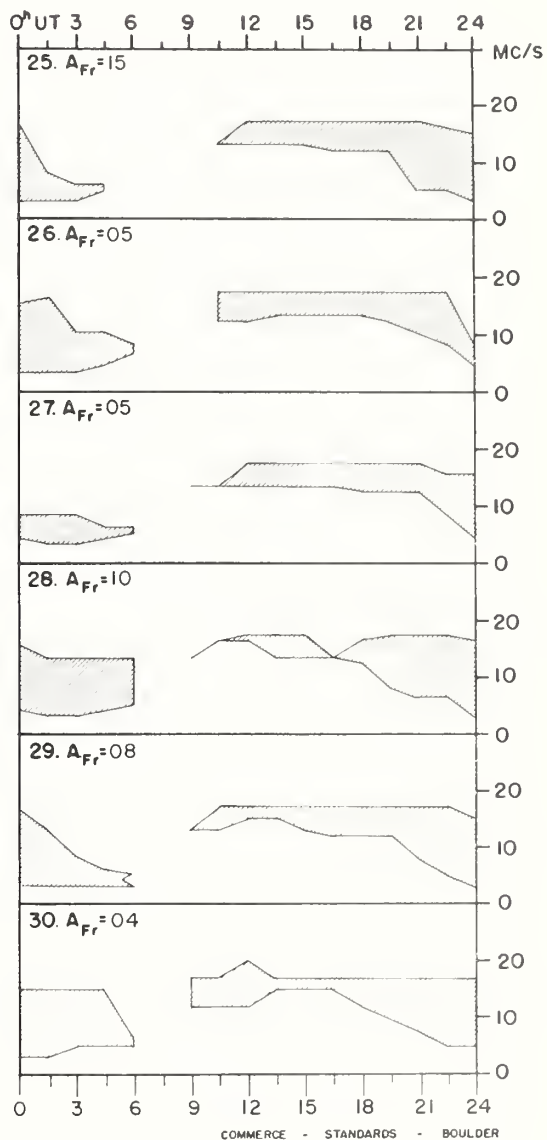
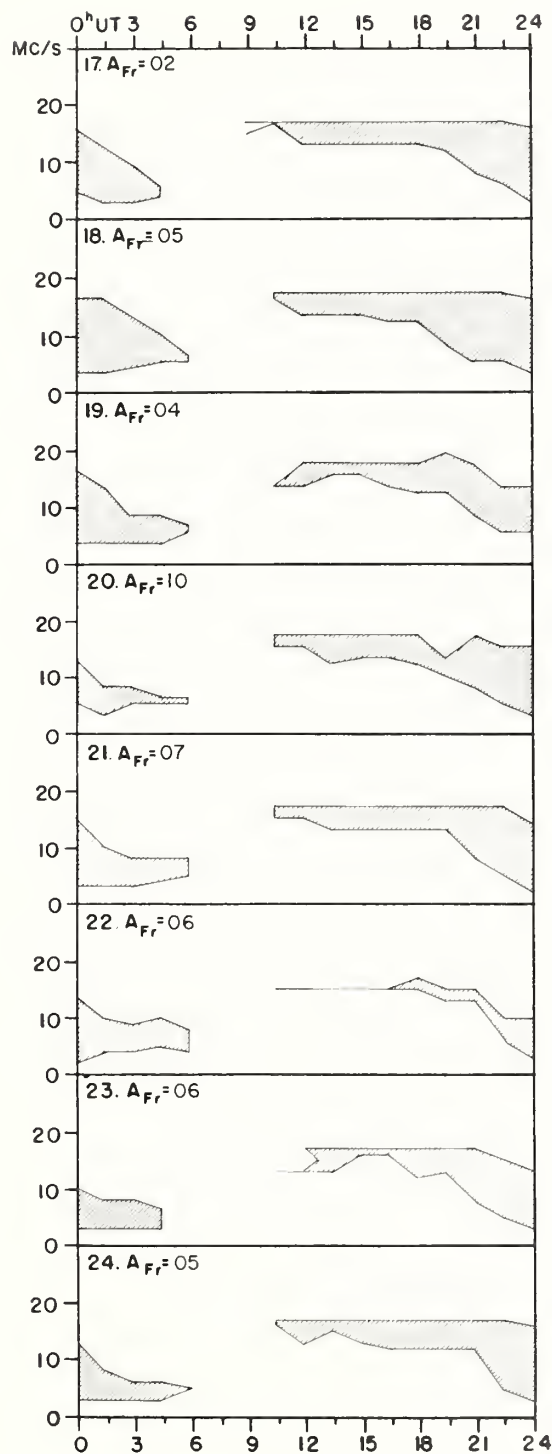


JUNE 1961



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JUNE 1961



Adapted from Observations by Deutsches Bundespost

IQSY ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

JULY 1964

JULY 1964	TIME OF ISSUE UT	ADVANCE GEOPHYSICAL ALERT	WORLDWIDE GEOPHYSICAL ALERT			
			NO.	TYPE	TIMING	ELABORATION
6	0400		81	Magnetic Storm	Expected	
7	0400		82	Magnetic Storm	Expected	
8	0400		83	Magnetic Storm	Expected	
16	0400		84	Magnetic Calm	Exists	
23	0400		85	Solar Calm	Exists	
24	0400		86	Solar Calm	Exists	
25	0400		87	Solar Calm	Exists	
26	0400		88	Solar Calm	Exists	
27	0400		89	Solar Calm	Exists	
28	0400		90	Solar Calm	Exists	
29	0400		91	Solar Calm	Exists	
30	0400		92	Solar Calm	Exists	
31	0400		93	Solar Calm	Exists	

COMMERCE - STANDARDS - BOULDER

